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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Treatment of 106 Cases of Puerperal Fever by Sulphanilamide. By LEONARD COLEBROOK, M.B., A. W. PURDIE, F.R.F.P.S., and others 1291
Localised Disease of Popliteal Artery. By A. M. BOYD, F.R.C.S. (*illus. on Plate*) 1294
Disability of Workers using Pneumatic Drills. By J. W. MCLAREN, M.R.C.S., D.M.R.E. (*illus. on Plate*) 1296
Treatment of Tuberculosis by Needle Puncture of Lung. By Prof. ROBERTSON LAVALLE (*illus. on Plate*) 1299
Myxœdema Heart Disease. By COURTENAY EVANS, M.R.C.P. (*illus. on Plate*) 1300
Tomography in the Vertical Position. By C. COLYER, M.R.C.S. (*illus. on Plate*) 1302
Supracallosal Epidermoid Cholesteatomata. By A. R. D. PATTISON, F.R.C.S. (*illus. on Plate*) 1303
Effect of Testosterone Propionate on a Postpuberal Eunuch. By G. L. Foss, B.Chir. (*illus.*) 1307

CLINICAL AND LABORATORY NOTES

Duodenal Obstruction in the New-born. By ANNE E. SOMERFORD, M.D. 1309
Chronic Osteomyelitis of the Humerus Simulating New Growth. By W. STEWART, M.D. (*illus.*) 1309
White Bile. By H. H. GREENWOOD, F.R.C.S. 1310

MEDICAL SOCIETIES

Royal Medico-Psychological Association 1311
Liverpool Medical Institution: Thyrotoxicosis 1313

NEW INVENTIONS

A Clavicular Sling. By D. C. CORRY, F.R.C.S. (*illus.*) 1318

REVIEWS AND NOTICES OF BOOKS

Control of Tuberculosis in England, Past and Present. By G. G. KAYNE, M.R.C.P. 1315
Medico-Legal Aspects of the Ruxton Case. By J. Glaister, M.D., and Prof. J. C. Brash, F.R.C.S. 1315
Adaptationin Pathological Processes. By W. H. Welch, M.D. 1316
Kirschner's Operative Surgery. Vol. III. Ear, Air Passages and Neck. Translated by Prof. I. S. Ravdin, M.D., and Prof. G. M. Coates, M.D. 1316
Biological Standardization. By Prof. J. H. Burn, M.D. 1316
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The Truth about Vivisection. By Sir Leonard Rogers, F.R.C.P., F.R.S. 1318

LEADING ARTICLES

IMMUNISATION AGAINST TYPHOID 1319
CONTACT GLASSES (*illus.*) 1320
CAMPAIGNS AGAINST PNEUMONIA 1321
GOODWILL AT MANCHESTER 1322

ANNOTATIONS

Experimental Anæmias 1323
Sarcoma of the Uterus 1323
Improving Winter Milk 1324
Anatomical Illustrations 1324
Prevention of Pulmonary Embolism 1324
Ocular Effects of Aspirin Idiosyncrasy 1325
Lung Puncture for Tuberculosis 1325
Cerebral Damage after Anæsthesia 1325
Heroes and Rabbits 1326
Duration of the Menstrual Cycle 1326
Brain and Mind 1327
Vaccination in Soviet Russia 1327

SPECIAL ARTICLES

Strength Tests. By T. BEDFORD, D.Sc., and C. G. WARNER, B.Sc. (*with chart*) 1328
General Medical Council: Penal Cases 1329
The Study of Cancer 1348
Scotland 1331
Ireland 1331
Vienna 1332
Australasia 1332
United States of America 1333

THE LANCET 100 Years Ago 1350

PANEL AND CONTRACT PRACTICE

Public Medical Services 1334

GRAINS AND SCRUPLES

From a Civil Servant (I) 1335

CORRESPONDENCE

Contact Lenses (Mr. A. Rugg-Gunn, F.R.C.S., Mr. F. A. Williamson-Noble, F.R.C.S., and Miss Ida Mann, F.R.C.S.) 1336
Subarachnoid Hæmorrhage Simulating Acute Abdomen (Sir Arthur Hall, F.R.C.P.) 1336
Assessment of Psychiatric Treatment (Dr. D. Curran) 1337
Carcinoma of the Stomach (Sir Arthur Hurst, F.R.C.P.) 1338
Gastromegaly due to Arterio-mesenteric Obstruction of the Duodenum (Dr. R. Miller) 1338
The Medical Profession in National Emergency (Mr. Somerville Hastings, F.R.C.S., and Dr. C. Brook) 1338
Trends of Hospital Policy (Dr. E. Wordley) 1339
Protein and Gout (Dr. L. Williams) 1339
Prescriptions by Druggists (Mr. F. C. Goodall) 1339

OBITUARY

Alexander Hill Griffith, F.R.C.S. 1342
The late Prof. H. C. Jacobaeus 1342
Dr. F. B. Grinnell 1342

PUBLIC HEALTH

Notification of Pregnancy—Typhoid in Our Generation (*with chart*)—The Typhoid Outbreak in Croydon—A Case of Small-pox 1340
Infectious Disease in England and Wales 1342

PARLIAMENT

Population 1343
A Debate on Malnutrition 1343
Notes on Current Topics: Blindness in Scotland 1345
Question Time: Nursing in Sanatoria—Mechanical Ventilation in Gas-proofed Rooms 1345

MEDICAL NEWS

University of Cambridge 1347
University of London 1347
Welsh National School of Medicine 1347
British Medical Association 1347
Royal Society of Edinburgh 1347
Presentation to Dr. Worth 1347
British Institute of Philosophy 1347
Spanish Relief Work 1347
National Health Campaign 1347
International Congress of Surgery 1347
Course on Hospital Administration 1347
Westminster Child Welfare Centre 1339

THE SERVICES

Royal Naval Medical Service—Army Medical Services 1348

NOTES, COMMENTS, AND ABSTRACTS

Beam Therapy at Birmingham 1351
Improving the Miner's Lot 1351
Supplements to the Diet of Children 1351
Undulant Fever 1352
Herbals 1352
Inhalation Therapy 1352
Produce from Bournville 1352

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ADDRESSES AND ORIGINAL ARTICLES

TREATMENT OF 106 CASES OF PUERPERAL FEVER BY SULPHANILAMIDE

(STREPTOCIDE)

BY LEONARD COLEBROOK, M.B., B.S. Lond.
MEMBER OF THE SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL

ANTHONY W. PURDIE, M.B., F.R.F.P.S. Glasg., M.C.O.G.
FIRST ASSISTANT IN THE DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY, BRITISH POSTGRADUATE MEDICAL SCHOOL; LATE RESIDENT MEDICAL OFFICER AT THE ISOLATION BLOCK, QUEEN CHARLOTTE'S HOSPITAL, LONDON

And the Members of the
HONORARY STAFF OF QUEEN CHARLOTTE'S HOSPITAL

(*Concluded from p. 1242*)

Discussion

A NUMBER of interesting questions arise in connexion with the clinical results reported last week. We shall discuss only a few of them.

IS THE HIGH RECOVERY-RATE DUE TO CHEMOTHERAPEUSIS?

How far are we justified in attributing the high recovery-rate in this series of cases (and in the series previously treated by sulphamido-chrysoidine and P.S.) to the chemotherapeutic agents employed? Although this question was discussed at some length in our report dealing with the red dyes (1936b) its importance justifies some further comment.

Our experience of puerperal infections by the hæmolytic streptococcus at Queen Charlotte's during the past seven years—comprising some 700 cases, investigated more fully, we believe, than any previous series of cases—leaves no room for doubt that the clinical results observed since the beginning of 1936 have been very much better than those obtained before that time. The improvement has shown itself in the greatly diminished death-rate, in the more rapid decline of pyrexia, and in the much lower incidence of parametritis and pelvic cellulitis. The beginning of this period of improved results coincided with the introduction of the new remedies. But there is also some evidence—not conclusive, we think—that the puerperal infections by hæmolytic streptococci have been on the average a little less severe during the same period. As Gibberd (1937) expressed it there has been somewhat less tendency for the infections to assume an "invasive character"—i.e., to extend beyond the genital tract tissues by the blood stream or the general peritoneal cavity. In Gibberd's opinion it was almost impossible, in view of this diminished invasiveness of the streptococcus, to arrive at any decision as to the parts played respectively by that fortuitous change in the disease process and by the new chemotherapeutic remedies. That conclusion seemed to us so important that we re-examined our data from a new angle—determining the mortality-rates among all the cases in which there was unmistakable evidence of "invasiveness." Such evidence was considered to be present in cases having hæmolytic streptococci in the blood stream (positive blood culture)—with or without signs of generalised peritonitis in addition. We do not contend that the segregation of "invasive cases" by this criterion gives us data entirely satisfactory for statistical analysis, but they seem to us good enough for the detection of big effects—and probably the best that we can obtain from human puerperal fever. The figures and mortality-rates (for which we are indebted to our colleague R. M. Fry) are shown in Table III. It will be seen that among the 22 septicæmic cases treated by the red dyes and sulphanilamide, although they were "invasive cases," the death-rate has been very much lower than among the cases in the same category observed during the years 1932–35. This suggests, we think, that the reduction in case-mortality (among these cases at any rate) has been effected more by the treatment employed than by lack of invasiveness of the streptococci.

We would submit, further, that if it cannot be stated *with certainty* at present that the drugs in question have played an important part in the control of the infection in our puerperal cases, we are nevertheless justified in regarding that conclusion as *highly probable* if we take into account not only the clinical data here presented but also certain collateral evidence. The collateral evidence we have in mind is of three kinds:—

(1) The fact—now demonstrated in many laboratories all over the world—that these drugs, sulphamido-chrysoidine, P.S., and sulphanilamide, are certainly able to control experimental infections by hæmolytic streptococci in laboratory animals—viz., mice, rats, and rabbits—not only when given at the same time and by the same route as the infecting streptococci but when given by a different route (including the oral) and after an interval of some hours.

TABLE III

DEATH-RATE FOR ALL BLOOD-POSITIVE CASES (HÆMOLYTIC STREPTOCOCCI) WITH OR WITHOUT GENERALISED PERITONITIS

Year.	Cases.	Deaths.	Death-rate (per cent.).
1932	14	13	93
1933	24	18	75
1934	26	15	58
1935	18	12	67
Totals	82	58	Aver. 71
1936 and first* quarter of 1937 (Prontosil and sulphanilamide treatment) ..	22	6	27·3

* The cases for 1936 and first quarter of 1937 only were chosen because Gibberd's analysis (1937) had dealt with that period.

(2) The fact that a curative effect in human beings has been demonstrated beyond all reasonable doubt in two distinct classes of infection by hæmolytic streptococci: (*a*) in acute meningitis (proven by culture from the cerebro-spinal fluid); and (*b*) in certain extremely chronic infections of subcutaneous tissue and of bone which had previously proved resistant to all therapeutic measures. The evidence with regard to meningitis is that whereas before the introduction of sulphamido-chrysoidine recovery was a rare event—Gray (1935) has computed it at 3 per cent.; he was able to find only 66 recoveries in all the literature since 1901—there have been no less than 26 recoveries reported during the past few months. [27] [30] [1] [16] [21] [13] [23] [7] [26] [19] [20] [2] [9] [14] Another case in the care of L. N. Silverthorne of Toronto was seen by one of us (L. C.) but has not yet been reported. The evidence with regard to chronic infections consists only of a few isolated cases, but in these the immediate response to treatment by sulphanilamide after years of suppuration was so dramatic that it was almost

impossible to resist the conclusion that the drug was directly responsible for their recovery.

These cases comprise the one already reported by us (Purdie and Fry 1937) of chronic infection of the skin and subcutaneous tissues which had refused to heal for three years following puerperal sepsis but healed completely within six weeks under treatment by sulphanilamide; and another case of very extensive suppuration (not puerperal in origin) involving cellular and bony tissues of the pelvis, with many sinuses which had persisted for several years. One of us (L. C.) was privileged to see this case in New York by the courtesy of Dr. Hugh Auchinchloss, but it has not yet been reported. The patient's rapid recovery under treatment by sulphanilamide was very remarkable; and it is perhaps worthy of note that the chronicity of the lesions did not interfere with the curative influence of the drug.

(3) The fact that the blood of patients under treatment by sulphanilamide (and to a smaller extent by the red dyes) acquires a very greatly enhanced power of killing hæmolytic streptococci, even when these are of high mouse virulence. This observation, first reported by one of us (L. C.) with Buttle and O'Meara (1936), has since been confirmed many times by our colleague E. D. Hoare. Although we do not know that this greatly increased capacity to kill the streptococci is a sine qua non for the checking of the infective process there can be little doubt that, when present, it must assist the checking.

To sum up, while we admit that a diminished severity of the infective process may have been in part responsible for the satisfactory results observed in these 100 cases, there seems to us very little doubt that the treatment by sulphanilamide has also played an important part. To make an even approximate estimate of the proportionate influence of these two factors would be worthless. There is, in our view, abundant support for the continued use of sulphanilamide or sulphamido-chrysoidine and P.S. in puerperal infections by hæmolytic streptococci, but not for their use in similar infections due to other organisms (apart from the *B. coli* infections of the urinary tract). In order to avoid the prolonged administration of these drugs to unsuitable cases, with risk of toxic effects, we would again urge the importance of a bacteriological examination of a vaginal swab taken as early as possible from every case of puerperal pyrexia.

THE RELATIVE EFFICACY OF SULPHANILAMIDE AND SULPHAMIDO-CHRYSOIDINE AND P.S.

Is sulphanilamide more or less effective than sulphamido-chrysoidine and P.S. in the treatment of human puerperal infections—and, if so, why? The clinical evidence here presented seems to suggest that sulphanilamide (as we have used it) has given slightly less satisfactory results than the treatment by the red dyes (combined oral and intramuscular). Although the proportion of very severe cases has been somewhat smaller in the present series the death-rate has been a little higher, the fall of temperature has often not been quite so dramatic, and a secondary rise has occurred rather more frequently. Parametritis of a mild type also occurred in a few cases, whereas it was not noticed in the prontosil series. It seems to us more probable that these differences indicate a slightly greater curative effect of the red dyes (in combination) than that they were due to fortuitous circumstances. Until we know more about the mode of action of these substances it is scarcely profitable to speculate why this should be so. We do not yet know whether the curative effect is closely related to the concentration of sulphanilamide in the patient's blood and tissues. Nor do we know whether the portion of the sulphamido-chrysoidine molecule which is not converted into sulphanilamide in the body plays any part in the curative process. The investigation of these problems is proceeding. Meanwhile, from the strictly practical point of view, it would seem desirable, when confronted with a very severe infection, to employ the intensive combined treatment by the red dyes (for dosage see Colebrook, Kenny, et al. 1936b); while for the less severe (and more usual) cases treatment by sulphanilamide by mouth alone would seem to be adequate and less expensive.

OPTIMUM DOSAGE OF SULPHANILAMIDE

We are unable to speak of dosage with great assurance. The prompt remission of pyrexia in most of our cases of average severity leads us to think that the doses we have used have been approximately optimal. Possibly the febrile disturbances after the cessation of treatment would have occurred less frequently if we had employed slightly larger doses. In this connexion it should be borne in mind that absorption of the drug from the alimentary canal—and also its elimination—may vary considerably in different persons. Dr. Fuller has indeed found some evidence of such variation but further data must be obtained before any general statement can be made with regard to it.

For the present, in view of the fact that a large number of patients are liable to develop met- or suph-hæmoglobinæmia—and a smaller number other toxic disturbances—we do not feel that the large doses employed by Foulis and Barr (1937) are either necessary or desirable for the treatment of infections of average severity. The problem is more difficult when we are confronted with a very severe infection, involving an obvious threat to the patient's life. Is any advantage gained in such circumstances by the use of large doses? or is there any risk of doing harm by them? The facts at our disposal are as follows:—

(*a*) In experimental animals with a severe infection, provided that we avoid doses which give rise to toxic symptoms, large doses of sulphanilamide are usually more effective than small doses—e.g., while repeated doses of 2·5 to 5 mg. will save the majority of mice infected with 10–100 M.L.D., larger doses, 10 to 20 mg. repeated, will be necessary to save the majority of mice infected with 1000–10,000 M.L.D.

(*b*) Large doses—12 to 15 grammes per diem for a few days—have been well tolerated by our most severe cases. They have not shown more tendency to produce met- or sulph-hæmoglobinæmia than do smaller doses—nor have they provoked more serious toxic effects.

(*c*) Broadly speaking, the concentration of sulphanilamide in the blood (and urine) has varied with the dose given, suggesting that there has not been difficulty in absorbing the larger doses (12 to 15 grammes per diem).

The blood concentration in 20 patients receiving 3 to 6 g. per diem was usually between 1 in 60,000 and 1 in 20,000: in patients receiving 8 to 12 g. daily concentrations of 1 in 15,000 to 1 in 7000 have been reached. (We have not sufficient data at present to say whether the bactericidal power of the blood for streptococcus increases pari passu with the concentration of sulphanilamide—or what concentration gives the optimal bactericidal power.)

To sum up, pending a decision as to whether the curative effect is dependent chiefly upon the concentration of sulphanilamide in the patient's blood and tissues (which may, for the time being, be taken as probable), it would seem advisable to use large doses, 8 to 15 g. daily for a few days in the very

severe infections, and to reduce the quantity if there appears to be any adverse effect; in any case to reduce it as soon as there is definite clinical improvement.

AGAINST WHAT MICRO-ORGANISMS IS SULPHANILAMIDE THERAPY EFFECTIVE?

Is sulphanilamide therapy effective (*a*) only against some of the serological types of group A hæmolytic streptococci; (*b*) against hæmolytic streptococci belonging to groups other than A; (*c*) against the micro-organisms, other than hæmolytic streptococci, which cause puerperal sepsis?

(*a*) It has sometimes been suggested that failure to control a hæmolytic streptococcus infection might be due to the insusceptibility of the infecting strain to the action of the drug.

Buttle, Gray, and Stephenson (1936) reported the protection of mice infected with five different "Griffith" types and one other strain whose type had not been determined. We understand that they did not encounter any mouse-virulent strain which was uninfluenced by the drug.

Supplementing this evidence we have determined the serological type of strains from a number of our cases—some of them clinically successful and others in which treatment was not successful. Fifteen strains from the conspicuously successful cases fell into 7 different serological types, and fifteen from the unsuccessful cases into 8 different types. Type 11 was represented six times in the successful groups, and five times in the unsuccessful. Type 27 was represented three times in the successful and twice in the unsuccessful group. Type 4 occurred once in each group.

So far as our own results go, therefore, and the evidence from experimental animals, there is at present no support for the idea that only some serological types or strains of group A are susceptible to sulphanilamide.

(*b*) The evidence with regard to hæmolytic streptococci of groups other than A is very scanty.

A satisfactory curative effect in experimental infections of mice has been obtained both at Queen Charlotte's and in other laboratories, with at least one strain of hæmolytic streptococci belonging to group B (the "Aronson-Neufeld" strain, usually referred to in America as O.90); but it cannot be assumed that a similar degree of curative effect will be obtained with other group B strains.

With one group C strain (S.34) we have obtained only a slight protective effect in mice.

With group G strains, we have been unable, so far, to increase the virulence for mice sufficiently to allow of satisfactory therapeutic trials of the drug. We are proceeding with this, and with the further investigation of the other groups.

Clinical trials of sulphanilamide in puerperal infections by streptococci of groups B, C, and G have been too few to allow of any conclusion, or even a definite impression. The results obtained in mice, although admittedly very incomplete at present, seem to warrant further trial in human infections by the streptococci of these three groups; and, since cases of this kind are not common, it is to be hoped that the outcome of such trials, whether favourable or unfavourable, will be reported.

With regard to infections by hæmolytic streptococci of groups D, E, F, &c., we know of no evidence bearing upon their susceptibility to the action of sulphanilamide. In group D ("hæmolytic enterococcus"), however, it has been our experience, like that of other observers (Bliss and Long 1937, Kenny et al. 1937, Helmholz 1937) that infections of the urinary tract are uninfluenced by the drug.

(*c*) So far as we are aware, no systematic investigation has yet been made (nor perhaps can be made) into the curative value of sulphanilamide (or sulphamido-chrysoidine and P.S.) in experimental infections of laboratory animals by the strictly anaerobic streptococci, *Bacillus coli*, *Streptococcus viridans*, or the non-hæmolytic, aerobic streptococci. Our clinical experience of genital tract infections by these organisms has not been sufficient to indicate whether or no sulphanilamide or the red dyes have any value in these conditions. Up to the present we have seen no striking curative effect. (The special question of *B. coli* infections in puerperal cystitis and pyelitis is reserved for consideration in a further report.)

Our experience of staphylococcal infections (see above) has been sufficiently favourable to warrant further trial in such cases until a compound is available which shows a better curative value in experimental infections.

Summary

1. 106 cases of puerperal sepsis have been treated by sulphanilamide—usually by mouth alone: 100 of them were infected by hæmolytic streptococci (92 belonging to group A Lancefield); 3 were infected by anaerobic streptococci; 3 by staphylococci.

2. The clinical course of the 100 cases infected by hæmolytic streptococci has been on the whole similar to that of the 64 cases previously treated by sulphamido-chrysoidine and P.S. (1936b), although resolution of the infective process has seemed a little less spectacular. The average stay in hospital has been 19·7 days as compared with 31·3 days in 1935.

3. There were eight deaths among the 100 cases * but only three of them can be regarded as deaths from straightforward sepsis in patients who lived long enough for chemotherapy to have a fair trial. The mortality-rate for all cases (199) infected by hæmolytic streptococci since the beginning of 1936 (when treatment by sulphamido-chrysoidine and P.S. was begun) has been 5·5 per cent. as compared with the average of 22·8 per cent. for the preceding five years. The significance of this change is discussed.

4. "Drug fever" was suspected in several instances.

5. Some degree of cyanosis developed in 58 cases and was usually associated with met- and sulph-hæmoglobinæmia.

6. Other toxic manifestations of the drug observed much less frequently have included prostration, paræsthesia, headache, visual disturbances, and joint pains. No generalised rashes have developed.

We wish to acknowledge the very valuable coöperation of Dr. Alice Woodhead who was in charge of some of the patients while resident medical officer at the Isolation Block; and of Sisters P. M. Burn and A. Parry throughout the investigation.

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* Fifteen more cases have been treated during the preparation of this paper—with no deaths. The death-rate for all cases of infection by hæmolytic streptococci, therefore, since August, 1936, has been 7 per cent.

LOCALISED DISEASE OF THE POPLITEAL ARTERY

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(WITH ILLUSTRATIONS ON PLATE)

DIRECT visualisation of the blood-vessels by the injection of opaque contrast media can now be regarded as an established diagnostic measure. As a means of studying the pathological anatomy of peripheral vascular disease arteriography is of great importance, revealing the early stages of disease previously unrecognised. In a previous paper (Boyd 1937) the value of these investigations in the recognition of thrombosis of the popliteal and femoral arteries was stressed and the possibilities of surgical relief were outlined.

Routine arteriography in early arterial disease during the last few years has clarified the indications for this investigation, and correlation of the symptoms with the radiological picture has enabled us to recognise clinically certain syndromes, the pathological bases of which in the past have been merely speculative.

The classic symptom of intermittent claudication is known to be due to insufficient blood-supply to the muscles during exercise. While this fact is well known it is not generally recognised that in the absence of other symptoms and of calcification of the vessels as revealed by X ray examination, the underlying arterial condition is often thrombosis of the popliteal and femoral vessels. It has been shown, moreover, that thrombosis occurs as a complication of an inflammatory or degenerative process in the arterial wall, and that the earliest site of disease is in the segment of the popliteal artery that lies at the level of the condyles of the femur.

The consequences of this lesion of the popliteal artery give rise to two distinct clinical pictures with different pathological bases. Most commonly the disease process gradually narrows the vessel until stasis and clotting occurs, the consecutive clot extending upwards as far as the origin of the anastomotica magna artery. Occasionally, however, thrombosis does not occur, the diseased segment remaining patent and leading to a very different train of events.

This paper is based upon four cases of the latter variety of localised disease of the popliteal artery investigated in the wards of the surgical professorial unit, St. Bartholomew's Hospital.

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CLINICAL RECORDS

Our attention was drawn to the importance of localised disease of the popliteal artery by the following case.

CASE 1.—A man, aged 41, was admitted to hospital in June, 1935, with a history of attacks of phlebitis in both legs extending over some years and a painful ulcer on the dorsum of the right foot in the cleft between the 4th and 5th toes, which had remained unhealed for one year. Exercise increased the pain, which spread into the calf muscles after walking for 4 minutes.

On *examination* the limb was normal in appearance except for the distal part of the foot and toes, which were slightly cyanosed, and the presence of an ulcer ½ in. in diameter on the dorsum of the foot between the 4th and 5th toes. There were well-marked postural colour changes. Femoral, popliteal, and dorsalis pedis pulses were present, but the posterior tibial pulse could not be felt. The Wassermann reaction was negative; blood pressure 168/118 mm. Hg. Temperature tests under spinal anæsthesia showed normal response on the left side but no rise in the affected foot.

Arteriography of the popliteal region showed localised narrowing and irregularity of the lumen over 1½ in. of the popliteal artery at the level of the condyles of the femur (Fig. I on Plate).

Operation.—Thrombo-angiitis obliterans was diagnosed and was treated by lumbar ganglionectomy. The post-operative course was uneventful and the limb became warmer and the toes a better colour than before operation.

Progress.—A few days after leaving hospital the patient experienced great pain in his 5th toe which became pale and cold, and a day or two later black. He was readmitted with gangrene of the 5th toe and the limb was amputated through the thigh.

Pathology.—The external appearance of the popliteal artery was normal, the narrowing seen in the arteriogram being probably partly due to spasm. The lumen was filled with soft recent clot of a few days' duration. The diseased segment was narrowed by internal thickening, and by adherent mural clots of longer duration which were partly organised. Histologically the vessel wall showed the fatty changes characteristic of atheroma.

Reviewing the case afterwards it occurred to us that the sudden vascular accident that precipitated gangrene in the toe might have been embolism by a detached fragment of mural clot or atheromatous material from the diseased segment of the artery. The vessels of the foot showed the typical changes of thrombo-angiitis obliterans and were much narrowed, so that the impaction of a small clot might easily have finally cut off the blood-supply of a toe that was already in a precarious condition. It was also possible that spasm of the diseased segment might impair the blood-supply of the toe to such an extent that gangrene would occur.

Physical signs depend upon the extent of the disease in the other vessels. Pulsation was present in femoral and popliteal arteries in all cases, but either the dorsalis pedis or posterior tibial, and in one case both, were impalpable. Arteriography is the only means of accurate diagnosis. The findings are constant. There is localised narrowing and irregularity of the lumen in the segment of the popliteal artery that lies at the level of the condyles of the femur. This segment is the least supported part of the vessel and is subject to constant strain with movements of the knee, which no doubt accounts for the localisation of disease to this segment.

CASE 2.—A man, aged 55, was admitted in August, 1933.

History.—August, 1930: began to have pain in left foot, 2nd toe became painful, ulcerated, healed slowly. June, 1931: severe pain in 4th toe, ulcerated, healed

slowly. September, 1931: similar pain in 3rd toe, became bluish-black, gradually recovered. August, 1933: sudden pain in 4th toe, became discoloured and ulcerated.

On admission.—Healthy man; blood pressure 210/158 mm. Hg. Wassermann reaction negative. Urine natural. Right leg normal. Left leg: distal part of foot and toes slightly cyanosed, ulcer on dorsum of 4th toe; femoral, popliteal, and dorsalis pedis pulses palpable, posterior tibial not felt.

The 4th toe was amputated and wound healed by first intention.

Progress.—Patient had no further trouble until November, 1936, when he was seized with pain in the 3rd toe which ulcerated and became black at the extremity. On readmission the clinical condition was unaltered except for the 3rd toe which was gangrenous.

Arteriography showed extensive disease of the popliteal artery and similar atheromatous patches in the femoral artery of more recent origin (Fig. II).

CASE 3.—A man, aged 34, was admitted in January, 1936.

History.—January, 1934: noticed that left shoe felt tight at the end of the day. January, 1935: gradual onset of intermittent claudication in the sole of the left foot after walking 100 yards, noticed his big toe white and numb; similar condition spread to 4th and 5th toes. August, 1935: while sitting watching a cricket match, sudden severe pain in foot, scarcely able to limp home, gradually diminished in the course of the next 24 hours. He had several similar attacks of severe cramping pain in foot spreading up to the lower third of leg relieved by vigorous massage of the popliteal region. September, 1935: intolerable pain outer side of foot and little toe. October, 1935: wife cut outer side of foot while paring some hard skin, ulcer formed which failed to heal.

On admission.—Healthy looking man. Wassermann reaction negative. Right foot normal. Left foot: colour normal, ulcer ½ in. in diameter on dorsum of foot at base of 4th and 5th toes. Femoral and popliteal pulses palpable, dorsalis pedis and posterior tibial not felt on affected side.

Arteriography showed a localised area of disease in the popliteal artery and thrombosis of anterior and posterior tibial arteries below a point in the lower third of the leg. The plantar arteries were much narrowed.

CASE 4.—Man, aged 36, admitted in February, 1936.

History.—March, 1935: left foot began to get painful, specially in the region of the 5th toe. June, 1935: pain became so severe that he had to give up work; he noticed his toe became white. January, 1936: pain spread to dorsum of foot and leg, present even while resting, all his toes felt cold and numb; pain became more severe in 5th toe, which became black and gangrenous.

Past history.—Attack of phlebitis for last 5 years.

On admission.—Ill looking man. Wassermann reaction negative. Right limb normal. Left limb: thrombosed saphenous vein palpable, foot swollen and pale, 5th toe black and gangrenous. All the pulses were present in the right leg, on the left side only the femoral and popliteal pulses could be felt.

Arteriography showed localised disease in popliteal artery.

The histories and the arteriographic findings in these four cases are so much alike that the condition appears to be a clinical entity which as far as we know has not been described hitherto. In each case there has been obliterative disease of the vessels in the foot gradually spreading up the limb. It seems reasonable to suppose that any further diminution in the blood-supply either by spasm of the diseased segment of the popliteal artery or by embolism of an already narrowed vessel might precipitate gangrene. The possibility of spasm of the popliteal artery was suggested by the history in Case 3, in which several attacks of severe cramping pain in the foot were relieved by vigorous massage of the popliteal fossa.

Localised Disease of Popliteal Artery

Case.	Age.	Disease.	Pulses.				Claudication.	Rest pain.	Gangrene.
			Femoral.	Popliteal.	Post-tibial.	Dorsalis pedis.			
1	41	Thrombo-angiitis.	+	+	—	+	—	+	+
2	55	Atheroma.	+	+	—	+	—	+	+
3	34	Thrombo-angiitis.	+	+	—	—	Sole of foot.	+	+
4	38	Thrombo-angiitis.	+	+	—	—	—	+	+

DISCUSSION

It is difficult to understand the natural history of atheroma of the popliteal artery. It has been definitely established that atheroma most commonly begins in the segment of the artery lying at the level of the condyles of the femur. The subsequent course of events would appear to be either (1) there is thrombosis of the vessel; or (2) the segment remains patent and becomes a source of emboli.

Thrombosis of the popliteal artery is a common occurrence. In 27 cases of arterial disease investigated, thrombosis of this vessel was found in 12. The only symptom in an uncomplicated block is intermittent claudication in the calf muscles, which is of gradual onset. In all cases where rest pain in the foot or ulceration was present disease of the distal vessels was found. Occasionally there is a history of slight numbness or coldness of the foot on the affected side, but it is never marked and is usually only elicited in response to a leading question. These distal symptoms are probably produced by such spasm of the peripheral vessels as may result from irritation of the vasoconstrictor nerves in the wall of the thrombosed segment (Leriche 1937). Leriche's hypothesis is supported by the results of excision of the thrombosed segment, an operation which in our experience has always led to demonstrable improvement of the circulation in the periphery of the limb.

The gradual onset of intermittent claudication and the absence of the dramatic features of embolism of the popliteal artery indicate that the occluding process is a gradual one, allowing time for the development of a collateral circulation. The arteriographic differences seen in embolism and gradual thrombosis are striking. In the former there is a normal collateral circulation, whereas in the latter sheaves of tortuous dilated anastomotic vessels are the characteristic feature (Fig. III).

The riddle of why the diseased vessel sometimes thromboses and sometimes remains patent might be solved by a study of the morbid anatomy of the artery. Specimens are very difficult to obtain because thrombosis so seldom leads to extreme circulatory insufficiency ,demanding amputation. Thrombosed segments excised at operation are of little value, only showing organised clot filling up the lumen of a comparatively healthy vessel. In the 5 cases in which arterectomy has been performed, arteriography showed that division of the healthy vessel beyond the distal end of the thrombosed segment would have injured valuable collateral vessels. Up till now therefore we have not had the opportunity for complete study of the thrombosed artery.

The segment remains patent.—We have yet to explain why the clinical picture of popliteal thrombosis should be so different from the state of the limb when the diseased segment of the artery remains patent. How is it that the condition of the tissues distal to a complete block is better than that accompanying localised disease, which would appear to be an earlier stage of the same process?

Two out of the 4 cases of localised disease came to amputation (Cases 1 and 4). In both the diseased segment showed gross atheromatous changes in the vessel wall. Examination of the remaining vessels of the limb showed the typical changes of thrombo-angiitis obliterans. The existence of the two diseases in the same patient is not uncommon. Buerger (1924) has shown that patients with thrombo-angiitis seem to have a "vascular mediocrity" which predisposes them to early degenerative arterial changes. Three out of the 4 cases were typical instances of thrombo-angiitis obliterans of the distal type, which affects principally the smaller vessels of the calibre of the plantar arteries and gradually spreads up the limb. In the fourth case there was clinical evidence of well-established arterio-sclerosis in the vessels of the foot.

The apparent discrepancy between the two syndromes of localised atheroma with thrombosis but no gangrene, and localised atheroma without thrombosis but with sudden onset of gangrene of a toe can be explained in the following way. Atheroma begins in the popliteal artery for the reasons given earlier in this paper. The narrowing thus produced, and possibly increased by spasm, leads to insufficient arterial supply to the calf muscles during exercise and gives rise to intermittent claudication. As the disease advances the calibre of the artery becomes progressively narrower and the collateral circulation hypertrophies. Thus when thrombosis takes place there are adequate vessels to maintain the circulation except when the additional strain of exercise is imposed. During the period when the artery is still patent the separation of small emboli or attacks of spasm are unlikely to cause distal gangrene if the vessels of the foot are healthy. If, however, there is already distal disease any further diminution of the blood-supply will precipitate gangrene.

SUMMARY

Four cases of localised disease of the popliteal artery are recorded. In all of them sudden gangrene supervened.

The hypothesis is put forward that the gangrene was the result of embolism of the diseased and narrowed vessels from detachment of mural clot or atheromatous material from the diseased area in the popliteal artery.

As an alternative explanation it seems possible that localised spasm of the diseased vessel might further impair the nutrition of the already ill-nourished toes and precipitate gangrene.

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MILLER GENERAL HOSPITAL, GREENWICH.—Tenders have been provisionally accepted by this hospital for the erection of a new out-patient department which will cost £41,000 exclusive of equipment. Mr. Sydney Harvey has given 5000 guineas towards the provision of a fracture clinic.

DISABILITY OF WORKERS USING PNEUMATIC DRILLS

WITH SPECIAL REFERENCE TO THE RADIOLOGICAL CHANGES

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(WITH ILLUSTRATIONS ON PLATE)

THE use of pneumatic machines in industry has extended considerably in recent years, especially in the ship-building, locomotive engineering, and certain other trades. They have been of great value for drilling and riveting, the energy being supplied by compressed air and the machine being applied by hand power. A certain number of workers who operate these tools have always complained that their use caused what was described as "dead hand"—attacks of blanching and numbness in the fingers with loss of power.

As early as 1925 Bridge and Middleton examined a group of masons who had been complaining of this phenomenon, and concluded that there certainly was a degree of transitory disability produced in the men's hands, due to two features acting together—namely, pressure of the tool impeding the circulation of the fingers, and the action of cold produced by the escape of cold air on the fingers. At the same time there was not sufficient evidence to show that permanent injury was likely to follow. Middleton (1930) later investigated groups of workers in the boot-and-shoe industry using "pounding-up" machines and came to similar conclusions with the additional observation that their condition did not appear to depend on the vibration produced by the machine, except in so far as it called upon an excess of static resistance in opposing the tendency to displacement of the object and this depended on the amplitude of the hammer blows and not on their frequency.

Loriga (1929) inquired extensively into the occurrence of "dead hand" and gave a list of recommendations for its prevention. In spite of strict rules, however, the use of pneumatic machines is associated with a considerable incidence of symptoms.

SYMPTOMS AND SIGNS

The workers complain of blanching of the fingers and loss of sensation and power. It is found that with one type of machine these symptoms occur after the man has been using the tool for about two years. The onset is gradual and is more noticeable in the cold weather; later the condition is fairly constant and is noticed whenever the hands are exposed or allowed to cool. The common finding is a blanching or cyanosis of the fingers, usually symmetrical. If this lasts for twenty minutes or longer the finger tips become anæsthetic and a very real disability is produced, in that the man has no power to carry out fine movements with his hands. He is unable to carry out the necessities of dressing and has to be assisted in putting on his collar and tie. It has been noticed that during an attack of blanching a cut on the fingers gives rise to no bleeding. Seyring (1930) reported the liability to this condition of "dead fingers," claiming that 4 per cent. suffered within two years of commencing work, 48 per cent. within a duration of between two to three years, and 55 per cent. between three and ten years.

Hunt (1936) examined seven pneumatic drill operators, and in an admirable paper shows that when their hands are cold these men exhibit a typical Raynaud's phenomenon.

I have recently had the opportunity to examine three groups of workers who have used pneumatic machines of varying types.

The first group consists of 20 men engaged in *pneumatic riveting*, using a machine of 13 lb. in weight, which works at a periodicity of 2300 strokes a minute. The men use these machines to rivet over the ends of cold copper stays in fire boxes. The work entails the use of the machines alternately in each hand, and both hands of the worker are affected. The tool is held by the workman in his right hand by the handle and the left hand guides the vibrating end of the machine on to the work. It is the guiding hand that is the first to be affected if the machine is not alternated from hand to hand. The guiding hand also receives the cold blast of the escape of compressed air. Of the 20 men, all had the typical circulatory changes, though the severity varied considerably. All complained bitterly about the disability their hands caused them. It appeared that their troubles were worse when using a machine of the "light" type; when a heavier machine was employed the symptoms were less, if any.

All in this group were examined radiologically and it was found that there were considerable bone changes. The typical change found in the carpal and metacarpal bones was the formation of "bone cysts"—areas of localised absorption of bone occurring in the carpal bones and in the heads of the metacarpals (see Illustrations on Plate, Figs. I to IV). Brailsford (1936) regards these areas of absorption as being of traumatic origin. In this series these bone changes have been produced in a comparatively short time and if the use of the pneumatic machine is continued the osteoporosis will extend and a risk of a pathological fracture is entailed. Jones (1937) reports a case of fracture of the os magnum through a cyst.

TABLE I (*Group I*)

Workers using 13 lb. Machines Working at 2300 Strokes a Minute

Patient's number.	Age.	Driller for—	Symptoms for—	Severity of symptoms, blanching, numbness, &c.	X ray changes.
1	39	6 y.	2 y.	++	No change.
2	25	10 m.	2–3 m.	+	No change.
3	30	6 y.	2 y.	++	Two cysts in L. semilunar.
4	45	6 y.	2 y.	++	Cysts in head of 2nd metacarpal.
5	45	4 y.	N.c.	+	Cysts 2nd and 3rd metacarpal, R. and L.; R. os magnum and unciform; L. semilunar and unciform.
6	35	6 y.	2 y.	++	Cyst in os magnum R.
7	35	10 m.	N.c.	±	Nil.
8	36	5½ y.	3 y.	++	One cyst in proximal phalanx, R. 4.
9	38	3 y.	2 y.	++	Cysts in semilunar and os magnum, R. and L.
10	38	4 y.	1½ y.	+	Cysts in semilunar and os magnum, R. and L.
11	33	5 y.	4 y.	++	Cysts in os magnum and scaphoid.
12	37	6 y.	2 y.	++	Cyst in os magnum and semilunar R.
13	45	6 y.	2 y.	++	Nil.
14	39	6 y.	3 y.	++	Cysts 3rd and 4th metacarpal heads L. L. os magnum and scaphoid and R. os magnum.
15	31	3½ y.	1½ y.	+	Cysts in L. head of 2nd metacarpal, os magnum, semilunar, trapezium, trapezoid, R. semilunar.
16	28	3½ y.	2½ y.	±	Nil.
17	46	5 y.	2 y.	±	Nil.
18	35	6 y.	2 y.	++	Nil.
19	45	6 y.	2 y.	++	L. trapezoid, R. scaphoid.
20	38	6 y.	2 y.	++	R. semilunar, L. scaphoid.

y. = years; m. = months. N.c. = no complaints.

TABLE II (*Group II*)

Workers using Machines for Iron and Steel Fitting, &c.

Worker.	Age.	Years employed.	Symptoms.	X ray.	Drill.
1	56	15	Pains in arms.	Nil.	12½ lb.; 2550 strokes per min.
2	52	15	Nil.	Cysts in L. semilunar.	13 lb.; 2300 strokes per min.
3	35	20	Blanching, &c.	Nil.	11½ lb.; 3000 strokes per min.
4	53	15	„	Cysts in R. and L. os magnum and in L. semilunar.	13 lb.; 2300 strokes per min.
5	47	8	„	Nil.	14 lb.; 2560 strokes per min.

Table I, dealing with the first group of 20 men, shows their ages, length of time employed as a riveter, duration of symptoms and severity, and X ray changes found.

It will be seen that of the 20 men, 13 showed definite radiological changes (65 per cent.). The most frequently affected carpal bones are the semilunar, os magnum, and scaphoid, and in the metacarpus the metacarpal head of 2nd and 3rd fingers. The cystic areas in the metacarpal heads were of a larger type than those in the carpal bones. No pathological fracture was seen in this series. In many of the cases a periosteal thickening of the phalanges was seen but this can be regarded as normal in men on heavy manual work. It is not uncommon to see occasional cystic areas in the carpal bones of manual workers, but only in a very small proportion. The incidence of 65 per cent. is very high.

TABLE III (*Group III*)

Workers Engaged in Pneumatic Chipping

Worker.	Age.	Years employed.	Symptoms.	X ray changes.
1	64	20	—	Cysts in scaphoid, semilunar, and cuneiform L.; at base of 1st and 2nd metacarpals L.; and in unciform, scaphoid, and semilunar R.
2	57	12	++	Cyst in L. scaphoid and in R. scaphoid.
3	46	16	±	Arthritis of hands.
4	47	18	+	Nil.
5	49	22	++	Cyst in R. scaphoid.
6	50	15	+	Cyst in R. os magnum and in L. scaphoid and semilunar.

In the second group, 19 men who had been using *pneumatic machines for iron and steel fitting and caulking steel around copper stays* were examined. In this group 11 men complained of the usual circulatory changes which were of a similar type to those

in the first series. The hands of 5 of these men were examined radiologically. Table II shows the findings in this group.

The X ray changes are of similar type and it is interesting to note that the frequency that produces the radiological changes in Cases 2 and 4 (Table II) is the same as that in Group I—namely, 2300 strokes per minute.

In the third group 6 cases were examined, all the men being employed in *pneumatic chipping*, using a variety of machines of varying weights and periodicity (Table III).

The X ray changes in this group were more pronounced, probably due to the greater length of years using a pneumatic drill.

PROGNOSIS

When the men are put off work or on to work not involving the use of pneumatic machines, there is only slight improvement in their condition. It is doubtful whether there would be any chance of complete recovery. The bone changes are a potential danger if the hands receive any considerable trauma, for a fracture might occur through an area of osteoporosis.

TREATMENT

Since the most distressing manifestation was a spasmodic vasoconstriction, it seemed that local medication with some vasodilating substance was indicated. It was therefore decided that two of the worst cases available should be treated tentatively by introducing histamine by means of an electric current into the affected hands.

The treatment which is described later was at first given three times a week. Soon after it was started the two patients volunteered the information that their "attacks of blanching" were less frequent, less extensive, and shorter in duration. After five weeks of treatment, the patient who previously suffered from several attacks a day now had only an occasional one when the temperature was exceptionally low. With warmer weather the frequency of the treatment was reduced to two, then one treatment per week, and eventually one per fortnight. Finally it was discontinued, because the condition no longer warranted it.

It is fully realised that the fact that the satisfactory progress was concurrent with seasonal rise in temperature, and the absence of records of threshold temperature at which spasms were initiated, detract from the value of these two observations; but as mentioned earlier, the treatment was undertaken entirely tentatively. At the same time, the patients were very intelligent and had a good idea of the circumstances under which their fingers would "go white." They were quite definite in stating that there was a very great improvement in the condition as far as this symptom was concerned. It is this which prompted the recording of the results obtained.

Method of treatment.—Histamine, being a cation, can be driven into the superficial tissues from a histamine phosphate solution contained in a suitable electrode when the latter is positive in relation to another electrode. The technique adopted is relatively simple. After an indifferent negative electrode has been applied to the patient's back, the hands are cleansed with ether to remove all traces of grease. When dry, the palmar and dorsal aspects of the fingers, the thumb, and metacarpals are thickly anointed with a paste consisting of 2 per cent. histamine phosphate in a tragacanth base. Lint is then folded so as to form a pad twelve layers thick and 12 by 5 in. This is soaked in tap-water and the anointed palmar portion of the hand is placed upon one half of it. The interdigital spaces are then packed with cotton-wool, also soaked in tap-water, and the other half of the pad is folded over on to the anointed portion of the dorsum of the hand.

Fine copper gauze of the proper shape and size, connected to the positive terminal of a direct current generator, is then folded on to the back of the pad and fixed in position by means of crêpe bandages or light sandbags.

On switching on the current, a gentle, pruritic sensation is experienced by the patient. The current is allowed to flow until the patient shows signs of histamine having reached the general circulation by flushing about the face and neck or complaining of a feeling of fullness in the head or even headache. When the current has been turned off, the electrodes are removed and the remainder of the histamine is washed off with methylated spirit.

It will be observed at the close of the treatment that the treated portions of the hands exhibit œdema and hyperæmia. Patients should be treated in the recumbent position and allowed to remain in that position for some minutes after the current has been switched off.

Individual variations as to tolerance and reaction to histamine are so great that it is impossible to lay down any hard and fast rule with regard to intensity of current and duration, but it should be borne in mind that the amount of histamine introduced is a function of the product of these two factors. The first treatment is best looked upon as an experiment which will serve as a useful guide to dosage in subsequent treatments. To this effect, the current is kept at 5 or 10 ma. or even 15 ma. until a minimal systemic reaction is obtained. Then multiplying the current measured in ma. by the duration in minutes will give a reference index which is noted in milliampere-minutes and made use of as a guide in further applications.

CONCLUSION

While there is no definite proof at present that resilient pads worn on the hands affect the occurrence of this condition, some employers require their use. It is difficult, however, to enforce a protective measure of this character. It will be noticed that the periodicity of the machine appears to be an important factor—a periodicity of 2300 strokes a minute, such as that of the larger machines, being a critical one.

At present there are no special requirements, affecting this condition, which cover the use of these machines, and the Workmen's Compensation Act does not so far provide compensation for those workmen who are prevented from following their employment. The disability that arises from the circulatory changes is often quite severe, but there is reason to suppose that if treatment is given the hands will return to normal in a short time.

The radiological changes are in the nature of an index of the trauma received by the hands. Apart from the local conditions, the men do suffer slightly in their general health, becoming rather worried and nervous about themselves.

It is interesting to note that as long ago as 1906 the Departmental Committee on Compensation for Industrial Diseases considered this question. They reported as follows: "Our attention was called to neuroses due to vibration caused by the use of pneumatic tools. Tremor and sleeplessness have occasionally been observed in individuals, but no evidence was obtained of the existence of any nervous disease from this cause which incapacitates from employment." It is only right to point out that since that date the use of pneumatic tools has enormously increased and their design considerably altered.

Although it is difficult to suggest preventive measures for the condition, it does seem that the matter calls for attention, both by makers and users,

and, further, that the condition should be recognised as one entitling a workman—when he is disabled by it—to compensation. The condition has now been included among the diseases and injuries scheduled under the German Workmen's Compensation Act, thus: "Diseases of the hands, bones and joints, from the use of pneumatic drills." The vasomotor disturbances—that is, the "dead fingers"—are not included in the definition.

I should like to express my thanks to Dr. J. C. Bridge, senior medical inspector of factories, for his help and advice; and to Dr. P. Bauwens, medical officer in charge of electrotherapy at St. Thomas's Hospital, for writing the details of the treatment.

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TREATMENT OF TUBERCULOSIS BY NEEDLE PUNCTURE OF THE LUNG

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(WITH ILLUSTRATIONS ON PLATE)

THE fact that tuberculous osteo-arthritis generally tends to become quiescent within three to four years of its beginning has led me to believe that some local modification must take place that diminishes the virulence of the infection, possibly owing to some humoral process. For the last 25 years I have been searching for some trace of the cicatrisation of the lesion that led to this condition and I was fortunate in finding it in bone.

THE NUCLEUS

As has been published elsewhere[1] this particular vestige of the cicatricial lesion in bone can be detected in radiograms, sometimes star-shaped or like the spokes of a wheel, at other times as a grouping of small round spots or pinheads (Fig. I on Plate). In every case the contour is sharp enough to be distinguished in the surrounding blurred background. Its size is considerably less than the area of a threepenny bit. I have named this scar the "nucleus of post-allergic focal infection" for I consider it as evidence of a reinfection. I have come to the conclusion that only one focus is to be found for each tuberculous joint.

In the last four years I have observed in stereoscopic radiograms of patients with pulmonary tuberculosis a lesion in the lung tissue similar to the nucleus or focus found in bone (Fig. II on Plate). Clearly, a direct observation such as is possible in bone tissue is not to be obtained in a functioning pulmonary parenchyma, and I cannot therefore study the modifications of the focus in relation to its blood-supply or even radiograph it under the same favourable conditions. I have had the opportunity, however, of examining post mortem the lungs of patients who had had a mild pulmonary tuberculosis but who had died from some other disease. I was thus able to obtain proof of my supposition—namely, that the nucleus consists of a fibrosis advancing more rapidly in the lung tissue than in the bone. I have found only one nucleus for both lungs.

In radiograms this peculiarly formed lesion is almost identical with the focus found in bone, but its observation is very difficult and it is only perceptible to one with an extensive experience of stereoscopic chest films. I believe that when we can take radiograms with an even faster speed than is now at our command, it will be possible to fix the nucleus in a moment of immobility and so increase its definition. With this idea in view I am still experimenting and trying out new methods in order to make the focus as clearly visible in lung as it has become in bone and thereby place it within reach of the practitioner.

THE PUNCTURE

With the puncture of the nucleus in the lung, I obtain, even to a greater degree, the beneficial results—both local and systemic—that I have elsewhere described as following the perforation of the focus in the bone—i.e., speedy detoxication, increased appetite and weight, good colour, no profuse sweating, increased tension of pulse, a state of euphoria and general well-being—within only a few days after the operation. Puncture was successful in 76–80 per cent. of about 450 bone cases, including those who were cachectic, and in the same proportion of a smaller series of about 200 lung cases. In the following weeks, decrease of sputa and of the pulmonary bruits, such as moist râles, can be observed, but the cough is apt to persist. Radiograms taken a month after the puncture already show signs of the gradual reabsorption of any infiltrated zone or of caseation in the lung field. This is much more noticeable in the films as time goes on. The pulmonary reticulum shows evidence of increased fibrosis throughout. This progressive amelioration reaches a condition of permanent cure, of which I have already obtained in cases of 8–10 years' standing. I have many radiograms which show this clearly.

It is necessary to add that though clinically or radiologically no signs of pulmonary tuberculosis have been found in patients who have tuberculosis of skin, bone, eyes, &c., I have always found a nucleus of post-allergic focal infection in the lung and that its perforation has benefited those lesions.

The absolute harmlessness of a puncture performed in the lung has been proved time and again. As long ago as 1917 Dr. Duval presented to the Société de Chirurgie de Paris the results of his first 100 cases of bullet extraction from the lung. With a Kocher's forceps he extracted from the depths of lung tissue, which had already formed a cicatricial mass around the foreign body, bullets as deep as 4–5 in. in the pulmonary parenchyma, and with no after-effects, seeing that the soldiers were discharged after a couple of days. Further innumerable cases have been recorded, bearing witness to Duval's statement of that time: "The pulmonary parenchyma tolerates the forceps extremely well. Puncture in the lung is just the same as puncturing the gluteal region, the leg or the arm. Its hemorrhages are insignificant, being either small or limited."

With a needle I puncture the nucleus which is surrounded by healthy pulmonary tissue, very likely bearing a local immunity. As this focus is generally placed under the pleura, penetration is only to the extent of an inch or two. These punctures are consequently innocuous as is demonstrated by its performance in over a hundred cases in our out-patient department.

[1] Robertson Lavalle, C. (1931) *Sem. méd. B. Aires*, **1**, 1743.

DISCUSSION

The curative effect of the puncture has been explained in the following way. It is thought that tuberculosis results from the diffusion into the systemic circulation of certain lysins—the chemical constitution of which is that of amino-acids—produced in the nucleus of post-allergic focal infection. These lysins act as a spur to other tuberculous lesions in the body or in the same tissue, with a tendency to caseation. Enclosed within the nucleus itself there are also to be found certain protein bodies—the haptens of Mendez or the globulins of Landsteiner—or autovaccines which owing to their molecular size are indiffusible. Presumably these haptens are liberated into the blood stream on puncture of the focus, thereby providing the specific antibodies and so favouring the cure of all the other tuberculous lesions in the body.

This theoretical conception may or may not describe the real process, but there is well-documented evidence of the cicatrisation of these lesions. This evidence has been enough to prompt the University of Buenos Aires in 1936, through the Argentine Government, to ask National Congress for an institute to be built with the object of applying this method on a larger scale. The necessary funds were voted, and in the very near future the institute will be an accomplished fact.

SUMMARY

(1) It is claimed that radical treatment of any form of tuberculosis is possible by surgical means.

(2) A nucleus is described of post-allergic focal infection, which requires for its recognition a trained eye and excellent stereoscopic radiograms.

(3) Puncture, which has been applied to bone in such conditions as coxalgia and Pott's disease, is now performed on the initial lung nucleus with far better and speedier results. Specific antibodies bound up in the nucleus are released into the blood stream by the puncture, affecting all the tuberculous lesions throughout the body.

MYXŒDEMA HEART DISEASE
TREATMENT AND RADIOGRAPHIC CHANGES

BY COURTENAY EVANS, M.D., M.R.C.P. Lond.

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(WITH ILLUSTRATIONS ON PLATE)

THE occurrence of enlargement of the heart and heart failure in myxœdema is well recognised. The decrease in size of the heart after thyroid gland administration has also been frequently described. Myxœdema heart disease is, however, uncommon enough to warrant the recording of further cases.

The Clinical Society's report on myxœdema (1888) includes 15 autopsies. In these, a third of the hearts studied showed to the naked eye left ventricular hypertrophy, in one the muscular substance of the heart being fatty, in one gelatinous. In 109 cases reported clinically, normal or weak heart sounds were present in all but 6. In one case the heart was large, in another a little enlarged, in two there were signs of mitral disease, in one there was a presystolic and in another an apical systolic murmur. Zondek in 1918 described lack of tone in the myocardium caused by muscular sensitivity of the sympathetic, and by myxœdematous infiltration of the myocardium. Fahr (1932) gave a full description of the clinical features of myxœdema heart disease and its response to thyroid treatment and lack of response to digitalis. He mentioned the characteristic enormous dilatation of all the chambers of the heart. He recorded experiments by Goldberg (1927), who examined the hearts of goats and sheep two years after thyroidectomy; arterio-sclerosis, atherosclerosis of the large arteries, ascites, anasarca, hydrothorax, and hydropericardium were present; the heart muscle of a number of these animals showed abnormal muscle-fibres with an absence of cross striations; the controls were normal. Fahr stated that of 17 cases of myxœdema, 13 (75 per cent.) showed symptoms or signs of heart failure, which disappeared completely after giving thyroid extract. Many cases were complicated by coronary arteriosclerosis. Campbell and Suzman (1934), Lerman, Clark, and Means (1933, 1934) have recently recorded similar cases.

CASE REPORTS

The following two patients illustrate the enlargement of the heart, extreme in one case, which may occur in myxœdema, with or without congestive heart failure. The changes are summarised in the Table.

Table showing Heart Measurements

Date.	Heart: Trans. diam. (cm.).	Treatment: Dose of thyroid.
	CASE 1	
Dec. 12th, 1935	19·0	Gr. 1. t.d.s. commenced.
Jan. 15th, 1936	18·5	Gr. 1 t.d.s.
March 23rd "	14·0	"
May "	—	Stopped taking thyroid.
Sept. 17th "	16·5	Recommenced gr. 1 t.d.s.
March 4th, 1937	14·0	Gr. 1 t.d.s.
	CASE 2	
Feb. 26th, 1936	15·5	Gr. 1 b.d. commenced.
April 15th "	13·0	Gr. 1 b.d.
July 13th "	11·7	"
Sept. 28th "	11·4	Gr. ½ b.d.

All films taken with the X ray tube six feet from the patient

LEGENDS TO ILLUSTRATIVE PLATE

(*See opposite page*)

Prof. ROBERTSON LAVALLE: *Treatment of Tuberculosis by Needle Puncture of the Lung*

I.—Radiogram of focal lesion in hip disease.

II.—Radiogram of focal lesion in lung.

Mr. BOYD: *Localised Disease of the Popliteal Artery*

I (CASE 1).—Radiogram showing narrowing and irregularity of the lumen over 1½ in. of the popliteal artery at level of the condyles of the femur.

II (CASE 2).—Extensive disease of the popliteal artery and similar atheromatous patches in the femoral artery of more recent origin.

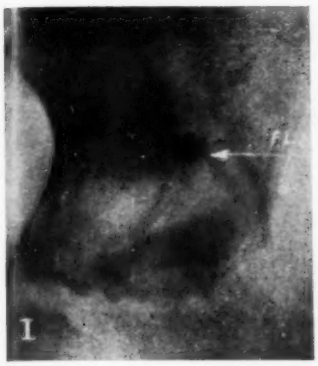
III.—Tortuous dilated anastomotic vessels in case of gradual thrombosis.

Dr. MCLAREN: *Disability of Workers using Pneumatic Drills*

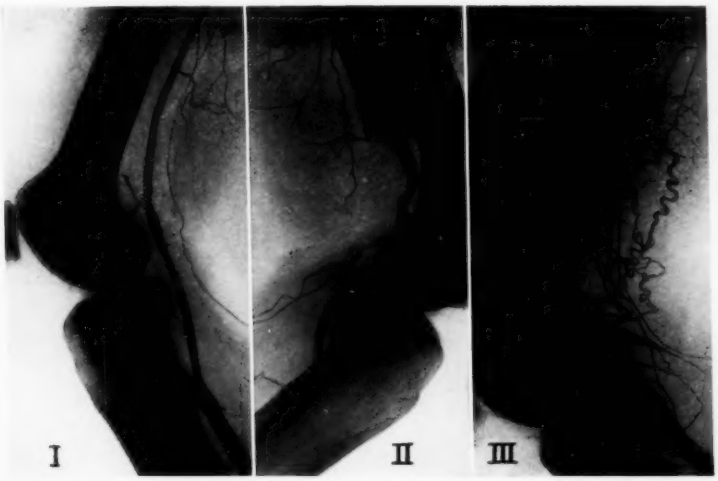
I and II.—Radiograms showing typical changes in carpal bones.

III and IV.—Typical changes in metacarpal heads (2nd and 3rd metacarpal).

PROF. LAVALLE : TUBERCULOSIS

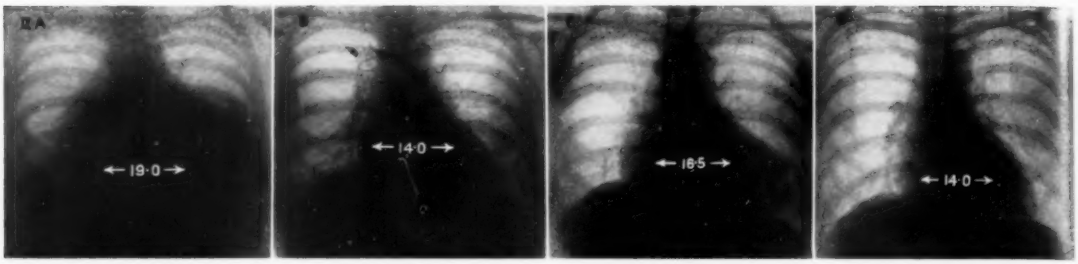


MR. BOYD : LOCALISED DISEASE OF POPLITEAL ARTERY



DR. McLAREN : DISABILITY OF WORKERS USING PNEUMATIC DRILLS

DR. COURTENAY EVANS: MYXŒDEMA HEART DISEASE



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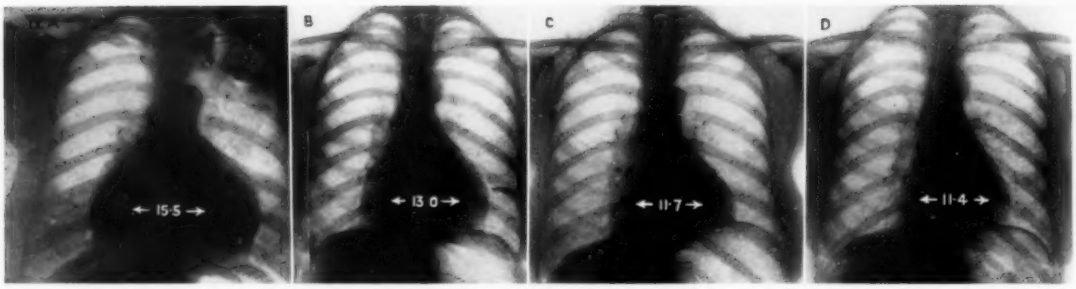

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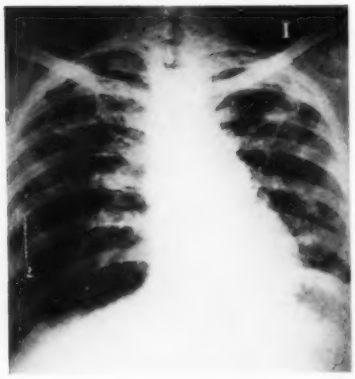
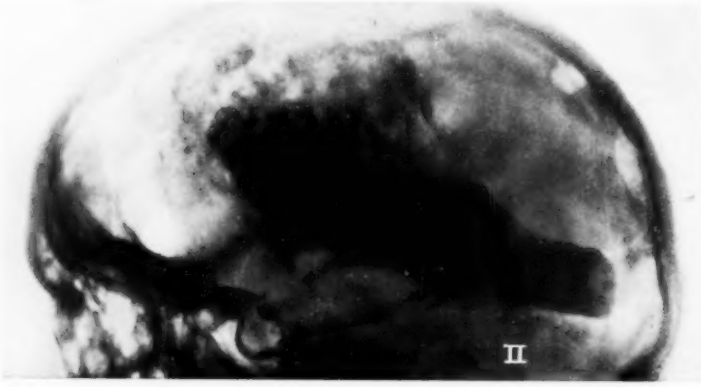
DR. COLYER: TOMOGRAPHY IN THE VERTICAL POSITION

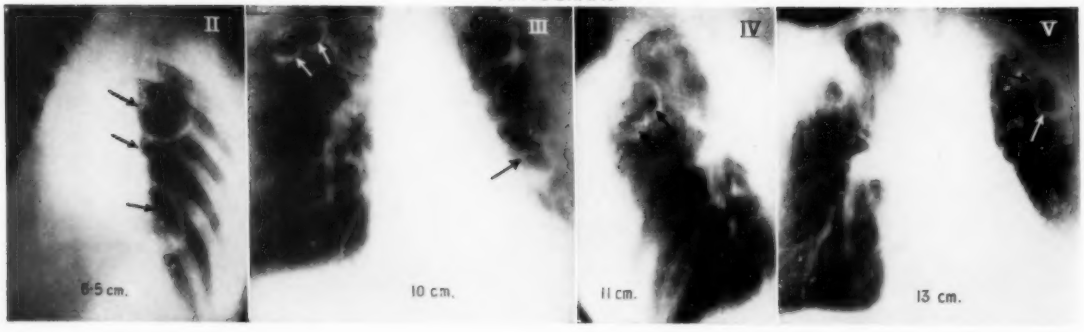
STRAIGHT RADIOGRAM



MR. PATTISON: SUPRACALLOSAL EPIDERMOID CHOLESTEATOMATA



TOMOGRAMS



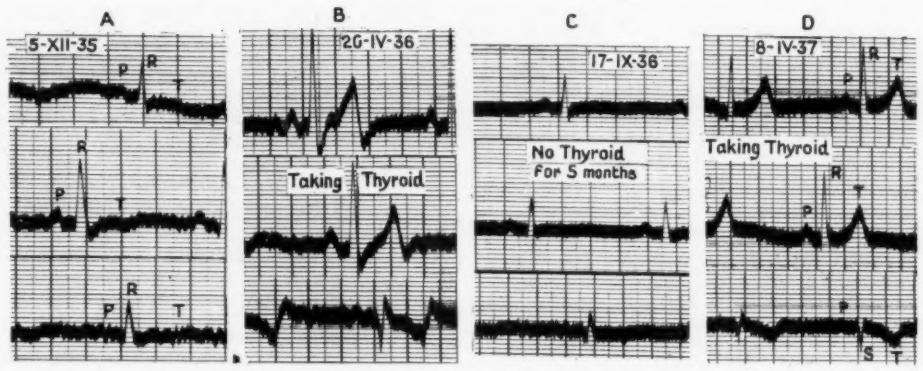


FIG. I.—Electrocardiograms from Case 1 showing effect of thyroid.

CASE 1.—A married woman aged 44 became unwell at the end of 1934. In August, 1935, she noticed swelling of the legs and watering of the eyes and increasing shortage of breath. The hair was not coming out. She came under observation in December, 1935.

Examination.—Her face was pale and puffy, the eyebrows were scanty, and there was myxœdematous swelling of the hands and legs. The heart was greatly enlarged, rhythm regular. Blood pressure 140/90 mm. Hg. No valvular disease was present. The lungs were clear and the liver not palpable; the urine contained a cloud of albumin, and microscopically a fair number of white cells and no casts. Blood examination: red cells, 4,000,000 per c.mm.; hæmoglobin, 50 per cent.; colour-index, 0·6; white cells, 6400 per c.mm.; anisocytosis and poikilocytosis were present. Her weight was 12 st. 7 lb. Electrocardiogram: sinus rhythm, flat T waves and small P waves (Fig. IA). Radiography: the heart showed great general enlargement of all chambers; transverse diameter 19 cm. (Fig. IIA on Plate). (No note was made of the post cardiac space after a barium swallow.) The lung fields were a little hazy. Basal metabolic rate: not estimated, as the patient remained an out-patient.

Treatment.—Oral administration of dried thyroid extract, gr. 1 three times a day, and iron and ammonium citrate, gr. 20 three times a day.

Progress.—The puffiness, shortness of breath, and anæmia were greatly lessened within a month. The hæmoglobin rose to 88 per cent. Radiography examination showed slight diminution only of the heart shadow. Four months of treatment resulted in considerable reduction in the size of the heart; transverse diameter 14 cm. (Fig. IIB). The electrocardiogram showed left axis-deviation, high voltage T and P waves, and an inverted T wave in lead III (Fig. IB). The hæmoglobin was 104 per cent.

The patient was discharged for treatment by her own doctor, and was advised to continue taking thyroid extract. These instructions she failed to follow, and five months later, having taken no more thyroid gland, she was again myxœdematous with puffy hands, swollen feet, and shortness of breath. The heart was much larger in size; transverse diameter 16·5 cm. (Fig. IIC). The electrocardiogram showed flat P and T waves and no left axis deviation (Fig. IC).

Thyroid gland treatment again removed the symptoms and signs of myxœdema, and reduced the heart to its previous size (Fig. IID). The electrocardiogram also changed to a picture similar to that taken five months earlier—left axis-deviation, high voltage P and T waves, and an inverted T wave in lead III (Fig. ID).

CASE 2.—A married woman aged 55 became unwell in the middle of 1935, noticing swelling of the hands, feet, and abdomen, and loss of hair from the head. Much headache was present. Early in 1936 she came under observation.

Examination.—The face was puffy and pale with a malar flush. She was orthopnœic and in early congestive failure. The heart was enlarged, the rhythm was regular, the liver was enlarged four fingers-breadth below the costal

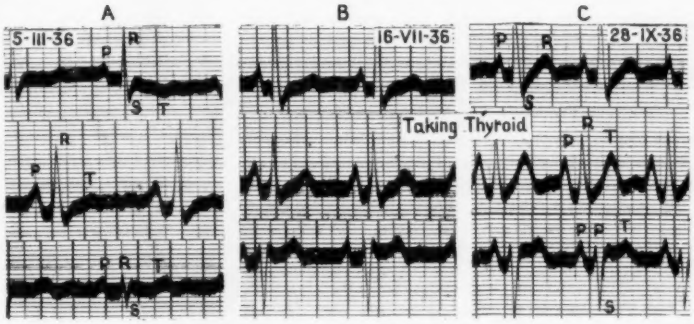


FIG. III.—Electrocardiograms from Case 2.

LEGENDS TO ILLUSTRATIVE PLATE

(*See opposite page*)

DR. COURTENAY EVANS: *Myxœdema Heart Disease*

II (CASE 1).—Radiograms showing diminution in size of heart shadow under thyroid treatment followed by increase when treatment was discontinued and further diminution when it was resumed. (Figures indicate width in centimetres.)

IV (CASE 2).—Radiograms showing diminution in size of heart.

DR. COLYER: *Tomography in the Vertical Position*

I.—Ordinary radiogram of the chest.

II–V.—Tomograms taken at various distances (shown in centimetres).

MR. PATTISON: *Supracallosal Epidermoid Cholesteatomata*

II (CASE 2).—Right lateral ventriculogram showing deformity of the lateral ventricle and outlining of the tumour with thorotrast.

margin, and there was swelling of the legs and hands which was myxœdematous in type. Blood pressure 160/85 mm. Hg. The urine contained no albumin. Blood examination: red cells, 3,500,000 per c.mm.; hæmoglobin, 75 per cent.; colour-index, 1·1; white cells, 8200 cells per c.mm.; normal differential count. Electrocardiogram: sinus rhythm; T waves flat in leads I and II, with slight inversion in lead I and vertical in lead III (Fig. IIIA). Radiography: an enlarged, square-shaped heart; transverse diameter 15·5 cm. (Fig. IVA on Plate).

Treatment.—Oral administration of dried thyroid extract, gr. 1 twice daily.

Progress.—The heart progressively decreased in size and appeared radiographically normal five months after the beginning of treatment; transverse diameter 11·4 cm. (Fig. IVc). In the electrocardiogram there was left axis-deviation and high voltage, vertical P and T waves (Fig. IIIc). The hæmoglobin became 82 per cent. and later 94 per cent.; the red cells increased to 4,800,000 cells per c.mm.

Both these patients are keeping well and free from symptoms at the present time.

DISCUSSION

The congestive failure signs and symptoms in these cases soon disappeared with the administration of dried thyroid gland extract, and the heart diminished in size to normal in one case and to nearly normal in the other. On suspending the thyroid gland in Case 1 the symptoms returned, and in a few months the heart had again become greatly enlarged. Thyroid gland administration quickly restored the patient and her heart to a fairly normal state.

The cardiac enlargement seems to be a general enlargement of all chambers, auricles, and ventricles; in Case 1 the left ventricle remains slightly enlarged in spite of treatment. The curious square shape of the heart in Case 2 is very interesting, as is also the return to a completely normal size and shape.

It must be noted that only a certain percentage of myxœdematous persons show cardiac enlargement. Possibly, as Campbell and Suzman (1934) suggest, change in size of the heart and congestive failure does not occur unless there is also organic heart disease. The enlargement of the heart is almost certainly due to dilatation, and it is perhaps similar to the dilatation that occurs in beriberi heart disease; Wenckebach (1928) refers to this similarity.

The morbid anatomical evidence, whether naked eye or microscopic, is not very helpful. In two cases that came to autopsy, Higgins (1936) described fibrosis of the myocardium of an advanced degree with coronary arterio-sclerosis, also a fibrin layer, containing little or no red cells, attached to the endocardium. He postulated an earlier stage, which would respond to treatment, of mucin infiltration of the heart muscle. He believed that hypercholesterolemia is present and results in coronary artery disease.

It is to be assumed that an early reversible muscle change takes place, probably mucin infiltration or change in the water content of the heart muscle, which results in failure of muscle tone and of the force of muscular contraction. The reversibility of the muscle change and its dependence on the thyroid gland is well illustrated in Case 1.

It has been suggested that the enlargement of the heart shadow is due to pericardial effusion. Higgins found no pericardial effusion at post-mortem examination in his two cases. The X ray appearances in my cases do not suggest it, with the possible exception of the first film in Case 1. I believe the waxing and waning in the size of the heart to the extent illustrated to be a phenomenon not usually seen in other types of heart disease. Considerable enlargement of the heart, with return to a normal size with recovery, also occurs in paroxysmal tachycardia, beriberi, heart disease, and arteriovenous aneurysm.

The importance of the diagnosis of congestive heart failure due to myxœdema is shown by the results of thyroid gland treatment.

SUMMARY

1. Two cases of myxœdema heart disease have been described.

2. The enormous dilatation of the heart has been illustrated by serial, comparable radiograms which show the great decrease in size after thyroid gland treatment.

3. Congestive heart failure may result from myxœdema, and the condition responds rapidly to thyroid gland treatment.

4. Suspension of thyroid gland treatment results in the return of the cardiac enlargement.

I wish to thank Dr. T. F. Cotton and Dr. A. White Franklin for their helpful advice, and Dr. George Graham for permission to publish the second case.

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TOMOGRAPHY IN THE VERTICAL POSITION

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(WITH ILLUSTRATIONS ON PLATE)

TOMOGRAPHY is a method of radiographing structures in a particular plane of the body, and at the same time blurring the outlines of other structures situated in the planes above and below it. It is mainly used in chest work to demonstrate the number, size, and position of cavities in chronic pulmonary disease, and to ascertain the condition of the lung tissue either in front of or behind any opacity.

Experimental work on this subject was started on the Continent so long ago as 1921. In 1935 Grossmann described at length the method and apparatus used by him in Berlin, and in 1936 a paper was published by McDougall, who used Grossmann's method and apparatus. More recently Twining has described an apparatus devised by himself, which can be used as an attachment to an ordinary Potter-Bucky couch.

After reading Grossmann's paper I realised the undoubted value of the tomographic method, but as the cost of the apparatus was somewhat prohibitive, I set about devising an apparatus of my own, and succeeded in making one at a small cost. Whilst experimenting with Grossmann's method, in which the patient is examined in the recumbent position, it occurred to me that additional information, such as the discovery of fluid in a cavity as shown by the so-called "fluid level" shadows, might be gained if the method could be adapted to the upright position.

I found this to be possible, and made another apparatus which I have been using now for some months, and with which I have obtained the results I expected.

It consists of an ordinary upright sinus stand fitted with a counter-balanced Potter-Bucky, in conjunction with a shock-proof rotating anode tube, mounted on a firm stand which moves along a track fixed to the floor. The cross arm of the tube stand is coupled to the Bucky by a wooden lever, which rotates about a pivot fixed to a bracket projecting from the wall. The position of the pivot is variable and determines the depth of the layer examined. The action of the rocking lever is to move the tube and Bucky in geometrical ratio in opposite directions. The tube through the cross-arm is fixed to the rocking lever at one end, and is therefore rotated about the pivot; whereas the Bucky, by means of the stud attached to its side working in a groove at the other end of the lever, is moved in a vertical direction.

The one disadvantage of the upright position is that transverse tomograms are a little more difficult to obtain, but, on the other hand, most patients are more easily managed in this position.

I have stated that the value of tomography is that it gives radiograms of a structure at a known depth from the surface, while blurring others that are superficial or deep to it. In practice this means that the shadows of the ribs can be practically obliterated, and that a cavity, the outline of which is partly or completely obscured by the shadows of the surrounding opacities in an ordinary radiogram, can be clearly demonstrated. It follows that by arranging that the X rays shall select a known plane of the chest, say at 6, 10, or 13 cm. from the dorsal aspect, it becomes possible to demonstrate whether there is a cavity or cavities at approximately the depth chosen, and, moreover, if the vertical position is used, it is possible to demonstrate the presence of fluid in the cavity, if it be present.

ILLUSTRATIVE CASE

The case that I have chosen for illustration is that of a man aged 26 who has suffered from pulmonary tuberculosis for 6 or 7 years. The physical signs indicate involvement, with cavitation, of the upper and middle zones on the right side, and upper, middle, and lower zones on the left side. The sputum has been positive, on and off, during this period. Fig. I (on Plate) is from an ordinary "straight" radiogram of the chest taken at 5 feet with the patient in the erect position. It shows the probable presence of numerous cavities, two in the right infraclavicular zone, two in the corresponding zone on the left side, one of which seems to contain fluid, and a large one in the left lower zone, in which the fluid produces the typically dense shadow with a horizontal upper border. Fig. II is from a tomogram taken at a preselected depth of 6·5 cm. from the dorsal aspect, the patient sitting, with the chest tilted to the left side. It shows on the left side a large cavity occupying the upper zone, which had not been previously discovered, and just below it a smaller cavity with a definite fluid level. In the lower zone is the large cavity seen in the "straight" radiogram, with its fluid level now accommodated to the position of the patient. Fig. III is a tomogram taken at 10 cm. from the dorsal aspect. It shows, in addition to the large cavity in the left lower zone, two cavities in the right upper zone, apparently side by side, the lower one having a horizontal fluid level. Fig. IV is from a tomogram of the right side of the chest only, with the chest tilted to the right, taken at a depth of 11 cm. It shows that the shadow of the fluid in the lower cavity has become horizontal again, and that the upper cavity is very much larger than in the previous illustration, and that it is situated in a plane anterior to the lower one. The outer wall of this cavity is irregular, and a mass of thickened pleura occupies the area between it and the chest wall. In addition, it now shows a shallow fluid level. Fig. V is from a tomogram taken at a depth of 13 cm. showing a cavity in the left upper zone, near the outer chest wall, containing fluid, and a second cavity just above it. The other cavities on this side are not outlined because they do not encroach on the plane selected.

CONCLUSION

There can, I feel, be no doubt of the value of tomography. Opinions may differ as to whether it is better to carry it out in the recumbent or vertical position. Personally I incline to the latter, because it gives not only the position and number of the cavities but also additional information about the presence or absence of a fluid content.

I am indebted to a private patient of mine, associated with the management of the British Legion Village, Preston Hall, who originally aroused my interest and started me upon my investigations, and to Dr. J. B. McDougall, medical director of the same institution, for his encouragement; also to Dr. J. C. McMillan for kindly selecting for me some patients upon whom I was able to test my method.

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SUPRACALLOSAL EPIDERMOID CHOLESTEATOMATA

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(WITH ILLUSTRATION ON PLATE)

The gross appearances of the epidermoid cholesteatoma are so striking that, in spite of its rarity, the tumour has attracted much attention, and in the past century there have been numerous reports of its occurrence. During recent years the cholesteatoma has been made the subject of detailed studies, both from the pathological and clinical aspects, by Critchley and Ferguson (1928); and by Mahoney (1936), who has collected records of 142 examples of the tumour. Its incidence is shown in the larger series of intracranial tumours: in Cushing's collection of 2500 histologically verified tumours there are 15 cholesteatomata, in Olivecrona's series of 520 tumours there are 7, and in Foerster's series of 750 tumours, 5.

NOMENCLATURE

The first recorded cases of cholesteatoma are those of Le Prestre and Duméril; these were described by Cruveilhier, together with a case of his own, in 1829. From the glistening mother-of-pearl appearance of the limiting membrane Cruveilhier gave the tumour the appropriate description of "tumeur perlée" (Bailey 1920). The term "cholesteatoma" was first employed by Johannes Müller in 1838 in a description of three cases, though he did not restrict its use to tumours occurring within the skull. In 1855 Virchow described by the name "Perlgeschwulst" two tumours of the temporal bone, and three in the meninges at the base of the brain. He regarded them as being of epithelial origin. Bostroem in 1897, in a report on

two cases, used the description "pial epidermoid" to distinguish between the tumour of the Cruveilhier type and the closely related hair-containing dermoid cholesteatoma.

The term cholesteatoma has been used to denote any tumour that contains cholesterol crystals, regardless of its origin or site, having been applied to the craniopharyngioma and to a remarkable tumour which occurs in the choroid plexus of the horse. The usual qualifications of "dermoid" or "epidermoid," which are applied to the intracranial cholesteatomata, would in themselves appear to be an adequate description of the tumour, and there is little justification for retaining the term cholesteatoma beyond a deference to tradition and general usage.

In common with other types of intracranial tumour, the cholesteatoma has its favoured sites of origin. Apart from the tumours which are found at various places in the cranial diploë, the usual sites are the fourth ventricle, the ventral aspect of the pons with extension into the cerebellopontine angle (parapontine), the interpeduncular region (parapituitary), and in the spinal canal.

FIG. I (Case 1).—Median longitudinal section of brain showing relation of tumour to corpus callosum.

CASE REPORTS

The purpose of this paper is to place on record the occurrence of two cholesteatomata in a hitherto unrecorded situation—viz., above the intermediate part of the corpus callosum. These cases comprise 2 of 4 cholesteatomata in the writer's series of 180 verified intracranial tumours.

FIRST CASE (*see Fig. I*)

A discharged soldier, single, aged 29, was admitted as an emergency case to the medical receiving ward of the Newcastle General Hospital on Sept. 1st, 1934. Five hours before admission he had a generalised convulsive seizure, which occurred without warning. Convulsions were repeated in rapid succession without any intervening recovery of consciousness. The average duration of each attack was about two minutes. It was reported that three weeks previously he had been an in-patient at another hospital with a nervous complaint that had been diagnosed as disseminated sclerosis. Since the time of his return home his symptoms had gradually improved.

On admission to this hospital the patient was deeply unconscious and in status epilepticus. Each fit began in the left side of the face, extending into the left arm and leg before becoming generalised. Two hours after admission the convulsions ceased, but consciousness was never recovered. Neurological examination was negative apart from the presence of a low-grade papilloedema. Pupils moderately dilated, equal and reacting to light. Muscle tone on either side of body equal. Deep reflexes active and equal. Plantar responses flexor. No neck rigidity. After cessation of convulsions pulse-rate 144, respirations 26, temperature 98·0° F. Blood pressure 115/80 mm. Hg. Urine normal. Blood-urea 0·86 mg. per 100 c.cm. Blood-sugar 0·20 mg. per 100 c.cm. Lumbar puncture: flow of clear fluid under no increase of pressure; fluid cells and chemistry normal. Wassermann reaction negative.

Clinical course.—Although convulsions did not recur, his general condition deteriorated with deepening coma. He died 68 hours after admission, the respiration-rate finally rising to 72, and the temperature to 104·5° F.

Past history.—I am indebted to Dr. A. G. Ogilvie for the following information regarding the earlier history of the case. Admitted to the Royal Victoria Infirmary, Newcastle-upon-Tyne, on July 23rd, 1934, complaining of weakness and stiffness of the left leg with occasional twitching of the left great toe. These symptoms were of three years' duration. A year after the onset of weakness in the left leg he noticed that the right leg was becoming similarly affected. In both limbs the symptoms were strikingly intermittent. Throughout the duration of the illness he has complained of attacks of dizziness, occipital headache, and blurring of vision in the right eye. He has also noticed occasional difficulty in holding his water. The early and family history are unremarkable. On clinical examination: patient of moderate physique in good general condition. Cerebration normal. Some slurring of speech.

Cranial nerves: visual acuity and fields normal; no papilloedema; pupils equal, reaction to light and accommodation normal; no nystagmus or impairment of external ocular movements; no functional impairment of other cranial nerves apart from weakness of elevation of left shoulder.

Slight weakness of left upper limb with impairment of fine movements of fingers; moderate spasticity and exaggeration of tendon reflexes; no impairment of sensation or coördination. Left lower limb spastic and calf muscles wasted, gross hyperactivity of tendon reflexes with plantar extensor response and ankle-clonus. Right lower limb reflexes hyperactive, plantar response flexor; no impairment of sensation or coördination in either limb.

Clinical course: during his stay in hospital his condition improved. At the time of discharge on August 18th, 1934, the slurring of speech had almost disappeared, vision in the right eye had become distinct, but he was still troubled with precipitate micturition; the left pyramidal signs were diminished.

Necropsy was restricted to an examination of the head. The calvarium and external aspect of the dura were normal. On reflecting the dura a yellow pultaceous mass was seen in the longitudinal fissure, projecting externally along the middle 3 cm. of the sagittal sinus. The superficial part of the tumour extended for not more than 2 cm. laterally, but on separating the margins of the fissure the medial surface of the right cerebral hemisphere was seen to be deeply indented. The falx occupied a median groove in the superficial parts of the tumour, and was covered in this region by a glistening pearly membrane. The greater part of the tumour mass was situated to the right of the midline and the indentation of the left hemisphere was less deep. After removal of the brain the base of the skull and dura showed no abnormality. After formalin fixation the brain was divided by a median longitudinal section. Above the intermediate part of the corpus callosum there was a large pale yellow cheesy mass surrounded by a pearly membrane. The contents of the tumour showed distinct concentric lamination. The genu and splenium of the corpus callosum were in their normal

position, but the intervening part was displaced downwards to such an extent that the body of the fornix was in close apposition with the anterior part of the floor of the third ventricle. In the left half of the brain the capsule of the tumour was dissected from its bed without difficulty. The depth of the cavity in the medial surface of the left hemisphere was not more than 3 cm. except in the area of a deep pocket which had been produced by the tumour insinuating itself into the pericallosal sulcus. On the inner surface of the tumour membrane there was a horizontal ridge which contained the vessels of the cingulate sulcus. After the removal of the contents of the tumour on the right side, the cavity had a depth of 5 cm. and was divided into two large loculi by a ridge at the level of the cingulate sulcus. The corpus callosum was thinned, especially in its lateral parts. On opening the cavity of the right lateral ventricle from the lateral aspect of the hemisphere, the walls of the ventricle were seen to be in contact in the middle part of the body of the ventricle. The upper wall of the ventricle was deficient to such an extent that it consisted partly of the outer surface of the tumour membrane. There was no obstruction of the cerebro-spinal fluid circulation. Apart from the presence of intense venous congestion the meninges were normal.

Histology.—The tumour membrane consisted entirely of plicated squamous epithelium, without the development of specialised skin structures. The contents of the tumour consisted of laminated sheets of keratohyaline.

SECOND CASE

(see Fig. II on Plate)

A female shop assistant, single, aged 25, was admitted on July 5th, 1935. She had had good health until the early months of 1933, when she started to suffer from attacks of frontal headache. These would have attracted little attention had it not been for their association with lapses of memory which compelled her to give up her work in April, 1933. Three weeks later she was taken acutely ill with intense headache and vomiting which were followed by loss of consciousness. She remained in a stuporose state for two weeks after which she gradually recovered. No details of her neurological state at this stage of the illness are known, except that an examination of the fundi had shown the presence of papilloedema. Between September, 1933, and June, 1934, she was able to get about, but was troubled with intermittent attacks of stiffness in the lower limbs, which became worse until finally she was bedfast. Throughout the next twelve months she was completely helpless owing to gross tremor of the upper limbs, the left arm being stiff and useless. During this part of the illness there was no complaint of headache. There was nothing remarkable in the past and family history.

Examination.—She was thin and wasted. Cerebration dull. Answered questions after much hesitation owing partly to difficulty in articulation as a result of tremor of the lips. Memory for recent events good, but account of early stages of illness very inadequate. Cranial nerves: no response to test odours on either side; visual acuity and fields normal; fundi normal; pupils equal and dilated, normal reaction to light and accommodation. No nystagmus or impairment of external ocular movements. Left lower facial weakness on voluntary innervation. Objective weakness of both upper limbs, especially of the left, with gross intention tremor and complete inability to execute fine movements; deep reflexes equally hyperactive. Abdominal reflexes absent.

Lower limbs: gross weakness and wasting with talipes decubitus; exaggeration of deep reflexes with bilateral knee- and ankle-clonus and of plantar extensor responses. Sphincters: urinary incontinence. Urine alkaline with presence of albumin and pus. Blood Wassermann reaction negative. Lumbar puncture not done. X ray examination of the skull showed a vault of average thickness and density with pronounced convolutional atrophy of the frontal and parietal bones. There were no localised changes. Sella turcica normal. No pineal shadow. The X ray appearances of convolutional atrophy were the only evidence in this case which were incompatible with the diagnosis of disseminated sclerosis. In view of this finding the decision to obtain ventriculograms was made.

Ventriculography: July 22nd.—Right posterior parietal burr hole: attempts to find the right lateral ventricle were unsuccessful. Left posterior parietal burr hole: the left lateral ventricle was found at a depth of 5 cm. The flow of fluid was extremely sluggish and it was possible to obtain 10 c.cm. only with the help of jugular compression. In view of the small quantity of fluid which was obtained, it was considered improbable that satisfactory definition of the ventricles would be obtained with the use of air. Therefore 10 c.cm. of Thorotrast was injected into the left lateral ventricle. Antero-posterior and postero-anterior radiograms showed the presence of thorotrast in both lateral ventricles. The dilated left lateral ventricle was displaced 2 cm. to the left of the midline and its upper part was rotated outwards. The body of the right lateral ventricle was flattened from above but was undisplaced. Both lateral ventricles were displaced downwards. Above and between them, obscuring their medial borders there was a large rounded aggregation of small shadows of variable density. The third ventricle was not defined. Right and left lateral stereoscopic views showed that the indentation and downward displacement of the anterior parts of the lateral ventricles were directly related to the anomalous shadow which clearly represented no part of the ventricular system. Elsewhere both lateral ventricles were dilated. The third ventricle was not visible.

Operation: July 22nd.—Anæsthesia: Evipan, endotracheal nitrous oxide and oxygen, 1 per cent. Novocain infiltration. A right frontolateral exposure was outlined, with the medial limb of the scalp incision in the midline. The bone flap was hinged high on the temporalis muscle and was turned down without difficulty. The dura, which was under a slight increase on tension, was opened from below. There was some flattening of the cerebral convolutions, but no other abnormality was seen on the surface of the brain. After the coagulation of the vascular attachments of the right frontal lobe to the sagittal sinus, the brain was gently retracted from the falx. On gaining access to the medial surface of the right frontal lobe some slightly turbid fluid was seen to escape from a depth of about 3 cm. The continued escape of this fluid, which contained flecks of an opaque cheesy material, enabled further retraction of the frontal lobe to be made. This sufficed to expose a large pultaceous mass, which was situated between the posterior parts of the frontal lobes and above the intermediate part of the corpus callosum. A large amount of yellow avascular material was removed by various means, chiefly by suction, exposing the entire upper surface of the corpus callosum and the adjacent part of the medial surface of the left hemisphere which were covered with shreds of a pearly membrane. Owing to the firm adherence of the membrane to the corpus callosum and to the anterior cerebral vessels, its complete removal was impossible. When, however, some of the membrane was removed in the posterior part of the field, the central part of the corpus callosum was seen to be defective and the cavity of the right lateral ventricle was widely opened. At the conclusion of the excavation, when all visible tumour material had been removed, a cavity was left which would have accommodated a golf ball. Intracranial tension was reduced to such an extent that the brain sagged away from the margins of the exposure. The cavity was filled with saline, and after hæmostasis had been obtained, the bone flap was replaced and the scalp wound closed in layers.

Histology.—The tumour consisted of an epidermoid cystic growth, with a thin lining of stratified squamous epithelium. There was an abundant production of laminated sheets of keratohyaline without evidence of spaces in which cholesterol crystals might have been lying.

Clinical course.—Consciousness was recovered two hours after operation. On the evening of the next day the patient had a short generalised convulsion, after which she was stuporose for some hours. For the first three days there was an almost complete left hemiplegia with conjugate deviation of the head and eyes to the right. She recovered the use of the left side after three weeks had elapsed.

The temperature remained normal until the sixth post-operative day, when an elevation to 100° F. occurred, after which an irregular pyrexia with temperatures of 103° and 104° lasted for five months. Fever was unassociated with any evidence of increased intracranial pressure.

Apart from daily elevations of temperature, her general condition underwent a striking improvement, and she became able to walk without help. Cerebration was improved and the tremulous explosive character of the speech disappeared.

At the end of 21 weeks she passed suddenly into status epilepticus which lasted for three hours and during which she nearly died. For the following 10 days she was in coma. Gradual recovery took place though the patient has a residual left hemiplegia and is incapable of leading a useful life.

DISCUSSION

It is generally agreed that the cholesteatomata are tumours of congenital origin, arising from epithelial inclusions which have been isolated at an early stage of embryonic development. Horrax (1922) regards the depth of the epithelial layer in the original cell inclusion as the factor that determines the origin of an epidermoid or a dermoid tumour. If the inclusion consists entirely of epithelial elements, an epidermoid tumour may be expected, but should the development of skin structures have progressed as far as the elaboration of hair or sebaceous follicles, a dermoid tumour will result.

The occurrence of cholesteatomatous masses in and about the temporal bone is well known. Although many of these formations represent a degenerative change that has followed chronic epithelial desquamation in association with infection, it is doubtful if all of them will admit of explanation on this basis. The highly complicated development of the temporal bone renders it an ideal site for the formation of ectodermal inclusions from which tumours may arise. Nager (quoted by Critchley and Ferguson 1928) has given a convincing demonstration of the formation of a cholesteatoma by the migration of epithelium through a perforation into the cavity of the middle ear. Moreover, the formation of cholesteatomata in the diploë remote from the middle ear cannot be explained by the presence of infection (Cushing 1922).

The favoured sites of origin of the cholesteatomata correspond accurately to the regions of the primary flexures of the embryonic brain. The origin of the supracallosal cholesteatomata, it is suggested, is analogous to the mechanism of their formation elsewhere, the epithelial implantation in this case occurring in the region of the longitudinal cerebral fissure during the process of its formation by the expansion and approximation of the fore-brain vesicles.

Owing to the extremely slow growth of the cholesteatoma pressure effects are inconspicuous or absent. The tumour shows a remarkable capacity for insinuating itself into every cleft and crevice, and any gross increase of intracranial pressure only occurs when the tumour is situated where it can interfere with the cerebro-spinal fluid circulation—e.g., in the fourth ventricle or the cerebellopontine angle. In the first case a low-grade papillœdema was seen only in the terminal stage of the patient's illness, and in the second a transient papillœdema had been observed two years before the patient's admission to hospital. The absence of tension is well illustrated by the tendency of the tumour membrane to become pocketed around small blood-vessels to which it becomes adherent. In the first case the vessels of the right cingulate sulcus produced a conspicuous ridge on the inner surface of the tumour membrane.

The remarkable appearance of the ventriculograms in the second case calls for some comment. Thorotrast had been injected into the ventricles on account of the poor prospects of obtaining an adequate demonstration of the ventricles with the use of air, though in the light of subsequent experience with opaque ventriculography a smaller quantity of thorotrast (not more than 5 c.cm.) might have been employed. Apart from the dilatation of the lateral ventricles and the presence of a seemingly unaccountable opacity, the appearances suggested the presence of a tumour above and between the lateral ventricles which extended mainly to the right of the midline. The possibility of the presence of a cyst of the septum pellucidum was considered, but the asymmetry of the ventricles and the extent of the downward displacement were held to be incompatible with this diagnosis. The diagnosis most favoured was that of a meningioma of the falx with the chance escape of thorotrast into the subarachnoid space around the tumour. The possibility of a cholesteatoma was not considered, though, from the experience of the first case, this might well have been thought of, especially as a subsequent study of the stereoscopic radiograms showed that the interstices of the tumour were defined.

The post-operative pyrexia in the second case is in common with the experiences of Critchley and Ferguson (1928). Olivecrona (1932) records a pyrexia lasting for several weeks after the removal of a cholesteatoma which had extended into the interior of the lateral ventricle. In another case, after the evacuation of a suprasellar cholesteatoma, the delayed onset of pyrexia and headache necessitated the reopening of the skull, when the cavity of the tumour was found to be occupied by an aseptic abscess. The post-operative course of the second case suggests that the removal of cholesteatomatous material was incomplete.

Convulsions have been a conspicuous feature in the history of both cases. In the first status epilepticus was followed by the patient's death, and in the second it was followed by a permanent hemiplegia. Although in these cases the convulsions have been outstanding in their violence, their occurrence has been noted in association with basal cholesteatomata. In a review of the tumours of the cerebellopontine angle, List (1933) points out that 5 of 20 cholesteatomata in this situation were associated with epileptic convulsions and 4 with psychic disturbances. Bauditz (1933) has reported two cases of basal cholesteatoma in asylum patients in which the tumour contents had been extruded into the subarachnoid spaces exciting a chronic cellular reaction. In both cases the patients had been subject to convulsions for several years. These observations give further support to the belief that a toxic substance is absorbed when the contents of the tumour are brought into contact with the cerebro-spinal fluid.

In both cases of supracallosal cholesteatoma the tumours have been in intimate relation with the cerebro-spinal fluid spaces. In the first the upper wall of the right lateral ventricle was deficient to such an extent that it consisted in part of the tumour membrane. In the second case thorotrast passed from the lateral ventricle to the interstices of the tumour and led, quite by chance, to its radiographic demonstration. It is unfortunate that an examination of the ventricular fluid was not made, for it might have been possible to have determined whether the communication was of some age or whether it had arisen consequent upon alterations in the pressure relations after ventriculography. The wide opening of the right lateral ventricle during the partial removal of the tumour membrane shows that the relation to the fluid spaces was very close.

SUMMARY

Two cases of epidermoid cholesteatoma are described in which the tumours have arisen in a

hitherto unrecorded situation—above the intermediate part of the corpus callosum. In both cases the symptoms have been strikingly similar, the slow progression and the intermittent characters of the affection leading to the diagnosis of disseminated sclerosis in each. The symptoms are to be attributed partly to local pressure and partly to the effects of a toxic substance elaborated by the tumour.

I am indebted to Col. W. F. Harvey of the Royal College of Physicians Laboratory, Edinburgh, for his description of the histological characters of the tumours.

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EFFECT OF TESTOSTERONE PROPIONATE ON A POST-PUBERAL EUNUCH

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Very little is on record about the action of testosterone propionate in man and our knowledge of the dosage required for substitution therapy is based entirely on animal experiments. Hamilton's interesting account (1937) of the treatment of a medical student with hypogonadism finds a useful parallel in the following case:—

CASE RECORD

The patient, a man aged 38, a foreman electrician, had been severely wounded in the thigh and scrotum by shrapnel at Givenchy during the late war; he was then 19 years of age. The lacerated remains of his testicles were removed but his penis was unharmed. When I saw him in 1937 his apparent age was 24–28; and his body was soft and non-muscular and almost female in type, with narrow shoulders, wide hips, and slight genu valgum (Fig. 1). The distribution of fat on breasts, abdomen, and hips was female. There was no hair on his chest and the pubic hair was also female in type (Fig. 2). The face was youthful but the voice was normally male; he had never shaved more than on alternate days. His development appeared to have been arrested at the age of 19, and he had been subject to flushes for several years. The penis was normal and well developed (9 cm. long, 9 cm. in circumference around the glans and 9·5 cm. at the base), but the prostate was very small. Before castration in 1918 he had been a normal active youth, with strong libido and sexual function, but since the removal of his testicles no erections had been possible. Nevertheless he had married in 1923, although it had been pointed out to him that he would be impotent. Slight turgidity took place at rare intervals and attempts at intromission were made, but the occasions became fewer and several years apart. Desire was almost negligible, attempts only being made for his wife's satisfaction. In the last few years, however, the frequency had increased slightly (once every 2–3 months).

The reasons leading up to his treatment with male hormone were as follows. In 1935 he had had recurrent attacks of an eruption on the face confined to the cheeks and beard area and nose, with a coexisting conjunctivitis and œdema of lids. This was diagnosed as eczema madidans in November, 1935, and later as an exposure dermatitis in May, 1936. There was a recurrence in June, 1936, also in August and December of the same year. Further attacks occurred in February, April, May, and June, 1937. The condition was not difficult to treat and cleared up in about a fortnight, but it seemed almost cyclical in its appearance. He was sent once more for a second opinion and the case was diagnosed as dermatitis venenata, taking 17 days to clear.

The almost cyclical recurrence led me to give testosterone propionate, on the analogy that œstradiol benzoate was of use in œstrin deficiency dermatoses of the menopause. Daily injections of 20 mg. Testoviron (Schering) were given with exactly the same local treatment (plain lotio calamine suited him best) starting on July 13th, 1937. By July 19th the skin was clear. On the 21st he came to me for his injection as usual, but implored me to postpone it for a while. He said he had not slept all night owing to a persistent and painful priapism which was not relieved at all by coitus; detumescence did not occur. To obviate any effect of suggestion I had not questioned him previously about the influence of the injections on his sexual function and he thought these were given only for his skin condition. He told me then that ever since the first injection erection had been more ready and that he had had coitus nightly. After the fifth injection erections were rapid and prolonged and coitus failed to relieve him. A good orgasm was enjoyed without any ejaculate, although there was the feeling of ejaculation. The libido was considerably increased, as evidenced by nightly coitus. Injections of testosterone propionate were still continued twice weekly but the skin condition recurred nevertheless. As soon as this was noticed, injections were given again daily, but the painful and persistent priapism was not seen this time. Erection was rapid and he said he was now normal again in sexual function.

By Sept. 3rd erection was frequent both day and night, and coitus occurred nearly every night. He had been taking Androstin tablets (Ciba) for four days (2 tablets t.d.s.) as well as injections, but found little difference except that lateral tumescence was perhaps more marked. The glans was not absolutely turgid but erection lasted half an hour; libido was almost excessive. Now he was only having injections every 2–4 days and the effect was still very powerful, but more normal. On Oct. 7th full normal power was evidenced following a weekly injection of 40 mg. of testosterone propionate. Libido was almost excessive, coitus took place regularly twice a week, and intromission was easy. He obtained a good erotic sensation and felt that he wanted to ejaculate, but there was no secretion of any kind. The erect penis measured 15 cm. in length, 11 cm. in circumference at the glans and 11·5 cm. at the base. Previously his wife had never obtained any erotic sensation and his return to sexual power had enabled him to satisfy her completely. Seen on Oct. 15th he said he

FIG. 1.—Photograph taken on Oct. 19th, 1937, showing general female conformation except for large hands. Distribution of fat and pubic hair is of female type. Note wide hips and genu valgum.

had recently noticed the growth of a few fair hairs on his chest and a stronger growth of beard, although he still only shaves on alternate days. During twelve weeks' treatment his weight increased from 10 st. 10 lb. to 11 st. 12 lb. and all his clothes became too small; whereas originally he

FIG. 2.—Photograph showing normal size of penis, absence of testicles in scrotum, situation of wound in left thigh, and female distribution of pubic hair.

wore size 14½ in collars, size 15½ are now too tight. On Oct. 29th erection had been impossible for the last eight days, following cessation of injections.

DISCUSSION

Hamilton (1937) during the first period of treatment gave his patient 550 mg. of testosterone acetate in one month (an average dose of 40 mg. three times a week) and penile erections were noticed after sixty hours. After six days erection reached a state of priapism—a development arising in my case rather more strikingly after seven daily injections of 20 mg. testosterone propionate. This excessive effect was lessened on reduction of dosage to 20 mg. twice weekly and was not found to recur so forcibly when dosage was increased again. Libido, however, was noticeably increased and desire for coitus was felt both by day and by night.

The improvement in mental and physical condition noticed in Hamilton's case was evident in my patient too. He was not morbid or depressed before, but after treatment he realised that he was more virile and able to satisfy his wife for the first time since their marriage; also he had increased in weight and development as shown by an increase of 1 st. 2 lb. in twelve weeks. During this period of treatment in which he has been given 940 mg. in 108 days (see Table) he has felt no ill effects from the injections, which are painless, and normal sexual function has been maintained by weekly injections of 40 mg. Further reduction of dosage to 20 mg. weekly seemed hardly adequate for erection was not so spontaneous and coitus was only just possible once a week.

Judging from the two cases it appears that a substitution dosage of 100–140 mg. is necessary to restore sexual function—which is the true indication of successful therapy—and that afterwards a maintenance dose of 20–40 mg. per week is adequate. The dosage required for reversal of œstrogen imbalance as suggested in the treatment of early prostatic hypertrophy would presumably be greater than these substitution doses. Experiences (unpublished) in the treatment of about 20 cases of enlarged prostate with testosterone propionate have led me to believe that dosage such as 40–50 mg. daily is at first necessary. For these prostatic cases my original dosage was based on the monkey and human experiments of Zuckerman and Greene (1936) and was 40 mg. weekly, but soon I found out that better results were obtained when 50 mg. was given daily for a fortnight and then at increasing intervals. In many of these men the power of erection was regained or increased only when the larger doses were given daily for some days.

Some further idea of adult human dosage can be obtained from the effect of testosterone propionate on the inhibition of œstrone action on the monkey's prostate (Zuckerman 1936) and the inhibition of menstruation in the same animal (Zuckerman 1937). It is suggestive from these experiments that seven or more times the dose of testosterone propionate is required than the known therapeutic dose of œstradiol benzoate. Whereas 10–15 mg. a week œstradiol benzoate is necessary for endometrial proliferation in the human female, probably 70–100 mg.

TABLE SHOWING DOSE IN MG. AND DATES OF ADMINISTRATION OF TESTOSTERONE PROPIONATE

July, 1937.		August.				Sept.		Oct.	
	Dose (mg.)		Dose (mg.)		Dose (mg.)		Dose (mg.)		Dose (mg.)
13th ..	20	4th ..	40	18th ..	20	2nd ..	20	4th ..	40
14th ..	20	6th ..	20	19th ..	20	7th ..	20	11th ..	20
15th ..	20	9th ..	20	20th ..	20	11th ..	20	13th ..	20
16th ..	20	11th ..	40	21st ..	20	13th ..	20	15th ..	20
17th ..	20	12th ..	40	23rd ..	20	15th ..	40	18th ..	20
19th ..	20	13th ..	20	25th ..	20	22nd ..	40	—	—
20th ..	20	14th ..	20	27th ..	20	28th ..	40	—	—
21st ..	20	16th ..	20	30th ..	20	—	—	—	—
23rd ..	20	17th ..	20	—	—	—	—	—	—
27th ..	20	—	—	—	—	—	—	—	—
30th ..	20	—	—	—	—	—	—	—	—
Dose (mg.)	220				400		200		120

Total dose = 940 mg.

of testosterone propionate per week is required for the relief of early prostatic symptoms in men and menorrhagia in women, although its action is more prolonged than that of œstradiol benzoate.

In the treatment of severe menorrhagia I have found that five doses of 50 mg. of œstradiol benzoate are usually sufficient to suppress the endometrial proliferation in women as confirmed by curettage. It is likely that the dosage of these hormones varies in a rough body-weight ratio and if so these doses for the male hormone are possibly correct.

Much more work from other sources is required for confirmation of this dosage before any dogmatic statements can be made. Recent observations by Steinach and Kun (1937) suggest that the action of male hormone may be intensified by the addition of a small dose of female hormone, when given to males.

SUMMARY

(1) A post-puberal eunuch has been treated with testosterone propionate. (2) Sexual function and libido returned almost immediately. (3) A total of 140 mg. testosterone propionate given over seven days was followed by persistent priapism. (4) Full libido and ability to perform the sexual act was maintained by a weekly injection of 40 mg. (5) A later increase in dosage did not cause a return of priapism. (6) There was an increase in weight of 16 lb. in twelve weeks. (7) Substitution dosage with testosterone propionate is probably between

100–140 mg., with smaller weekly maintenance doses. (8) Treatment doses are likely to be greater in cases of senility or prostatic syndrome.

Liberal samples of Testoviron (testosterone propionate) were supplied by the courtesy of Messrs. Schering Ltd. I am indebted to Prof. T. B. Davie for facilities for photography and for his helpful criticism.

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— and Greene, R. (1936) *Ibid*, **2**, 1433.

Clinical and Laboratory Notes

DUODENAL OBSTRUCTION IN THE NEW-BORN

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Obstruction of the duodenum in infancy is somewhat rare, and it seemed that the following case might be worth reporting.

A baby girl aged 14 days was admitted to Pendlebury Children's Hospital with the history that she had always had difficulty in swallowing, and on that account atresia of the œsophagus had been suspected. For three days before admission she had vomited copiously, the vomit consisting of yellowish material and mucus. The motions were black and hard, probably consisting of constipated meconium.

On admission the baby was cold, grey, and dehydrated, with glazing eyes, and, as she was so ill, radiological examination was not considered feasible. She was fed from a pen-filler with peptonised milk, and a few drops of brandy every hour, and was given subcutaneous injections of saline solution every six hours. She failed, however, to respond to treatment, and died four days later.

Autopsy.—The body was that of a small emaciated baby with a protuberant abdomen, particularly in the upper third. On opening the abdomen, the stomach was seen to be considerably enlarged, filling almost the whole of the upper third of the abdominal cavity; it contained milk residue and mucus, but no bile. The stomach was not much hypertrophied, and the mucosa was apparently normal. There was no hypertrophy of the pylorus, which was patent. The first part of the duodenum was bound down by adhesions to the neck of the pancreas, and seemed to be bent round that organ. The pancreas appeared to be very prominent and nodular, though microscopical section failed to show any abnormality. The duodenal wall was normal, and there was no dilatation. The bowel below the adhesions was shrunken and collapsed. The remaining organs (including the œsophagus) were normal.

In 1931, in conjunction with Dr. Lapage and Dr. Howe, I published a record of three cases of duodenal obstruction in the new-born. Two of these were definite atresias of the duodenum at the duodeno-jejunal junction, and the third was a case of obstruction due to a band containing minute branches of the superior mesenteric vessels and lymphoid tissue. The present case differs from these in that the obstruction was apparently due to adhesions binding the first part of the duodenum to the neck of the pancreas.

REFERENCE

Lapage, C. P., Somerford, A. E., and Howe, F. (1931) *Arch. Dis. Childh.* **6**, 307.

CHRONIC OSTEOMYELITIS OF THE HUMERUS SIMULATING NEW GROWTH

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In the following case a chronic pyogenic infection of one of the long bones gave rise to signs and symptoms strongly suggestive of a periosteal new growth.

The patient was a man of 64, admitted to the wards with a diffuse swelling in the middle of the shaft of the right humerus. The swelling had been present for a month; it was red, felt hot and brawny, and seemed to have an intimate association with the shaft of the bone. The temperature was only slightly raised (it varied up to 100° F.) and the pulse-rate was in the neighbourhood of 80.

FIG. 1.—Radiogram of the right humerus showing increased density of diaphysis and periosteal new bone simulating spicules of new growth.

A small exploratory incision was made just above the insertion of the deltoid muscle and a small portion of the tumour area was removed for investigation. This material showed a fibrosing reaction spreading among and replacing the muscle-fibres. Here and there were fairly large areas of adult fibrous tissue. The blood-vessels were mature, with well-developed walls. Scattered throughout the section were foci of inflammatory reaction of polymorphic type but no actual abscess areas were found. The picture was one of replacement fibrosis of the muscle-fibres by a subacute and chronic inflammatory invasion. Radiography showed a thickening of the shaft of the humerus with increased density of the bone extending up to the neck (Fig. 1). At the centre of the shaft the appearance resembles that of a multilocular cyst. There is considerable periosteal thickening with some laying-down of new bone. This periosteal new bone bears a considerable resemblance to the spicule formations of a new growth.

The patient had had an accident to the arm in 1916, but the details of it were rather obscure. The Wassermann reaction was not done. He died a few days later.

Post-mortem examination.—The body showed considerable emaciation. The heart chambers were dilated, and on the auricular side of the anterior mitral cusp was a localised recent vegetation the size of a large pea; the other valves were normal except for dilatation. The lungs were congested. The peritoneum was thickened, with adhesions. The abdominal organs showed toxic degeneration. The pulp of the spleen was soft but the organ was not enlarged (160 g.). Extensive fibrosis was seen in the muscles in the lower part of the upper half of the right arm. Opposite this fibrosed area the bone was thickened and roughened

with spicule formation. On sawing the bone longitudinally much sclerosis was found and almost complete obliteration of the medullary cavity. In the centre of the shaft was a small Brodie's abscess. Cultures taken from this cavity gave abundant and pure growth of *Staphylococcus aureus*.

The specimen (Fig. 2 A, posterior surface of right humerus) shows the widening of the shaft due to the laying down of new bone. This is much roughened by irregular spurs resembling spicule formation and extends 8 cm. along the shaft. The articular surfaces are not involved but the inflammatory periostitis extends upwards to the joint capsule. The cut surface (Fig. 2 B) shows the extensive sclerosis in the shaft with almost complete obliteration of the medullary cavity. There is much deposit of subperiosteal new bone. In the centre of the most extensively sclerosed portion of the shaft is the small residual abscess cavity. The sclerosing reaction does not involve the head.

A B

FIG. 2a.—Posterior surface of the right humerus showing spar-like processes simulating spicules of new growth on radiological examination.

FIG. 2b.—Cut surface of right humerus showing Brodie's abscess and dense sclerosis in shaft.

Brailsford (1934) states that sarcoma of the humerus is not uncommon and may give rise to increased density of the shaft and periosteal thickening. These sarcomata usually show spicules at right angles—thickest at the central part and tapering to blend with the shaft at the extremities of the lesion. Brodie's abscess as a rule involves or is in close proximity to the epiphyseal line. The new periosteal bone has a smooth margin and is laid down in a regular manner. Syphilitic osteoperiostitis may show irregularity and sclerosis of the cortex and in the middle of the shaft gives the appearance of areas of rarefaction.

The case described was on clinical grounds and radiological appearances much more suggestive of new growth than of chronic osteomyelitis. The position of the tumour suggested new growth. Sarcoma is common in this position whereas Brodie's abscess is rare. The relatively short period of symptoms was definitely in favour of growth rather than of chronic pyogenic involvement.

One must suppose that the extreme chronicity of the pathological processes had enabled the patient to adapt himself to these changes although the post-mortem appearances did suggest a fairly severe lesion.

I am indebted to Mr. T. Bates, under whose care the patient was admitted for the clinical data, and to Dr. H. Neville Crowe for the X ray photographs.

REFERENCE

Brailsford, J. F. (1934) Radiology of Bones and Joints, London.

WHITE BILE

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JUST as hard cases make bad law, according to the legal aphorist, so do single instances of recovery from conditions known to be usually fatal prove dangerous guides to a judicial prognosis. The condition known as "white bile" invites more precision of statement than is usually accorded to it in text-books, in lectures, or in debate. Such guarded expressions as "usually fatal" or "a few cases recover" might be amplified, even statistically stated, by those whose wide and specialised experience command respect.

Some well-known surgeons have declared that recovery is impossible in an established example of this grave condition, and I report the following case more in the hope that it will provoke from them a detailed pronouncement on the frequency with which the condition occurs and on the factors influencing the prognosis, than from the belief that recovery in this instance held any element of the miraculous.

The patient, a widow aged 70, had a clear history during the past 10 years of gall-bladder disease—pain in the right subcostal and lumbar regions worse after meals (but the onset bore no fixed time-relation to the ingestion of food), flatulence, and mild constipation. Attacks of biliary colic occurred at intervals, with vomiting and diarrhœa, each attack beginning suddenly and lasting from a few hours to a few days, but this last attack had lasted almost continuously since July, and during the last month there had been loss of weight (2½ lb.). For 5 days before admission she had been jaundiced, and by the time she was sent into hospital by Dr. W. A. C. Spence on Oct. 18th, 1937, she was deeply jaundiced. The van den Bergh reaction was positive, and the X ray examination after a barium meal yielded no evidence of any gastric lesion. On Oct. 19th she passed per anum a gall-stone measuring 3 by 2 cm., and faceted on one side, but despite this fortunate happening the jaundice deepened, mild pyrexia (99·2° F.) developed, and the pulse-rate rose from 80 to 96.

Operation was done on Oct. 25th under gas-and-oxygen and ether by a right paramedian incision. Clear, colourless, limpid fluid like water was aspirated from the distended common duct; by incision of the duct a stone slightly larger than that passed on Oct. 19th was found to be tightly impacted at the lower end of the common duct, and was extracted by a Mayo Robson's scoop together with some biliary "mud." Afterwards the instrument passed with ease into the second part of the duodenum. A tube was stitched into the common duct. The gall-bladder, reduced to an hour-glass shaped mass of fibrous tissue contracted down on to several large stones, was rapidly removed and the stump of the cystic duct stitched by Moynihan's method into the end of a large drainage-tube. The liver was shrunken, the edges thin and sharp, the surface smooth and mottled brown, yellow, and deep purple-red. The abdomen was closed.

Progress.—Shock was severe, but under continuous intravenous drip instillation of 10 per cent. glucose with insulin the patient rallied. Three days after operation

she had a rigor and the intravenous tube was removed. On Nov. 1st, seven days after operation, the bile draining from the tubes became coloured, the jaundice became less deep, and the urine was bile-stained. Since then recovery has been progressive and uneventful, and the tubes were removed on Nov. 12th.

Since "white bile" is excreted only by a liver that has ceased to perform its more important functions, and that the arrest of function is brought about by some obstruction such as a gall-stone impacted in the common bile-duct, it might be expected that the prognosis will be influenced by the length of time the obstruction has been absolute. I have avoided quoting references, but the nearest to precision about the time-factor that I have found is the statement by Illingworth and Dick (1932): "If the gall-bladder is absent or functionless through disease this state of affairs is reached within a week from the onset of complete obstruction . . . a functioning gall-bladder delays the appearance of white bile for a much longer period." *

Another item to be taken into account is the speed and gentleness of the operation—that is to say the degree of trauma inflicted. In this case everything conspired to further the attainment of that end—a spare subject, absence of adhesions, fairly easy extraction of the gall-stone impacted in the lower end of the common bile-duct, freedom from troublesome bleeding, and that perfect harmony of teamwork to which "speed" is more justly attributable than to any legerdemain of the surgeon.

Yet another factor is free drainage, and here the rule of preserving the gall-bladder as an added channel of drainage was transgressed. The gall-bladder was a small contracted mass of fibrous tissue, hour-glass in shape, holding tightly two gall-stones of a size likely to cause a recurrence of the obstruction, if by ill chance they escaped by the same path taken by their predecessors. Extraction would be tedious, the resulting drainage doubtful, less efficient than by the stump of the cystic duct. Removal was easy and swift, and oozing of blood negligible. Moreover, after lifting out the stone from the common duct, the end of the narrow scoop passed freely into the duodenum through a large opening presumably left by the ulcerating through of the preceding large stone; free drainage by that way seemed assured. The after-treatment followed on the lines already described—glucose and insulin by the intravenous drip method, and all those other measures calculated to overcome shock in an elderly subject.

In several previous cases which might deserve inclusion in this category the bile was glairy and had some faint tinge of colour, but the fluid aspirated from the common duct before incision was in this instance as limpid and clear as water, about which there could be no ambiguity.

It will be noticed that the jaundice had existed for only 12 days before operation and that some relief from back pressure on the liver was given on the sixth day when the first impacting stone escaped from the common duct, probably by ulcerating through into the duodenum. It seems likely that the period over which the liver cells had to bear the full brunt of the back pressure resulting from complete obstruction was only 6 days. By tabulating a series of cases with the duration of complete obstruction it might be possible to deduce a relationship between this and the prospect of recovery.

The pathologist reported absence of any malignant change in the gall-bladder.

CONCLUSIONS

1. It is evident that there are degrees of whiteness of the bile draining from the common duct after operation.

2. There is no criterion yet established of the stage during complete obstructive jaundice at which the liver ceases to function. After three weeks or more of apparently complete blocking of the common duct, with jaundice of a deep green tint and severe itching, removal of the obstruction is not invariably followed by discharge of "white bile."

3. Where the bile has been deprived of all colour and is clear, colourless, and limpid recovery is still possible.

4. Death is probably due in the main to post-operative shock and inadequate after-treatment rather than to an inability of the liver to resume its functions.

* Illingworth, C. F. W., and Dick, B. M. (1932) Textbook of Surgical Pathology, p. 537.

MEDICAL SOCIETIES

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION

AT a meeting of this association held in London on Nov. 24th, with Dr. G. D. MCRAE, the president, in the chair, a paper on the

Control of Asylum Dysentery by Prophylactic Inoculation

was read by Dr. K. C. L. PADDLE. The term dysentery in mental hospitals, he said, applied to a clinical entity characterised by abdominal pain, rise of temperature, and the passage of blood and mucus. The organism most often responsible was the *B. dysenteriæ* of Flexner. Flexner dysentery had been endemic at Caterham Hospital for many years. The hospital accommodated over 2000 mentally defective patients, most of whom were low-grade; blocks of wards jutted out at right angles to a covered corridor, and the first and second floors of adjacent blocks were connected by bridges. There was no suitable isolation block, and when dysentery occurred the affected ward had to be put in quarantine. Since 1932 it had been the practice to rely upon simple isolation combined with inoculation of contacts, and results had been surprisingly good. When a suspected case of dysentery was found the ward was isolated, and if laboratory findings confirmed the diagnosis all contacts were inoculated and the ward remained in isolation until the case of dysentery had cleared up and the laboratory had reported three negative findings on the stools.

From 1928 to 1936 the number and grade of population in the hospital, the diet, and the keen standard of clinical and laboratory diagnosis had remained stable. In 1931 dysentery was assuming epidemic form, and since 1932 all contacts had been inoculated. The years between 1928 and 1931 could be regarded as a control period, and the years between 1932 and 1936 would be called the inoculated period. The vaccine used was prepared by the Central Laboratory of the London County Council Mental Hospitals, and was made from cultures of *B. dysenteriæ* Flexner (all types) isolated from cases of dysentery at Caterham and at four other L.C.C.

mental hospitals. It contained 500,000,000 organisms per c.cm.; a dose of 0·5 c.cm. was given, and followed a week later by a second dose of 1 c.cm.; there were no unpleasant reactions. In order to have some estimate of the duration of immunity, an experiment was carried out on three healthy patients with a vaccine—supplied by Dr. Golla—equal in strength to the stock one but containing organisms from a pure culture of *B. dysenteriæ* Flexner W. Four boys who gave a negative titre to Flexner W were chosen, and three of them were inoculated with Dr. Golla's vaccine. The agglutinising property of their sera against Flexner W was estimated in R.T. units over a period of sixteen weeks. The control remained negative throughout; the agglutinating properties of the blood rose in the other three, and in two of them was still above 10 R.T. units at the end of sixteen weeks; there appeared to be individual differences, one case becoming negative in nine weeks only. It was convenient to class any case of dysentery occurring in a ward as "primary" if it had not been preceded by another case within a minimum period of sixteen weeks. A secondary case was one which followed a primary case within sixteen weeks; contacts were patients in a ward where a primary case of dysentery occurred. The total number of cases of dysentery in the control period was 77 and in the inoculated period 45. In the control period 31 primary cases occurred, with 1504 contacts; of these, 46 (1 in 33) developed dysentery. In the inoculated period 29 primary cases occurred with 1585 contacts; of these, 16 (only 1 in 99) developed dysentery. In short, though the number of primary cases had remained approximately equal in the two periods, the secondary cases in the inoculated period had been considerably lower. Moreover, in the inoculated period, nearly all the secondary cases occurred within sixteen days of the primary case, whereas in the control period many secondary cases occurred after the first sixteen days.

The value of inoculation was illustrated in a ward in which all contacts had been inoculated after a case of dysentery; there were no further cases until the end of the eighth week, when another patient developed the disease. It had looked at first sight as though an inoculated patient had developed dysentery within eight weeks, but on further inquiry it had been found that the patient had been transferred from another ward, and that he had never been inoculated at all. Moreover the primary case, now showing no clinical symptoms, was now found to be passing dysentery bacilli in great numbers; in fact there had been every opportunity for the dissemination of dysentery among the inoculated contacts, but not one of them had caught it; but no sooner had a non-inoculated patient been admitted to the ward than he fell a victim. Finally, among 1584 inoculated contacts not a single case of dysentery had developed after the completion of inoculation.

The CHAIRMAN, in opening the discussion, said he had always been impressed by Dr. Paddle's caution, so felt that his opinion of the value of dysentery inoculation deserved acceptance.

Dr. W. M. FORD-ROBERTSON agreed that Dr. Paddle had given practical and satisfactory evidence of the value of inoculation. The occurrence of secondaries at all showed that inoculation should begin as soon as possible after the primary case had developed. A regular prophylactic régime of vaccine treatment would probably be ideal in hospitals but was difficult to carry out. An oral vaccine had been tried in Ontario during the ten years 1923–33, and 65 per cent. of patients had developed agglutination titres of over 160, and only 4 per cent. titres of less than 140; none had given negative results. The vaccine had been given in a series of five doses, replacing the evening meal, and the results had been successful. Interruption of the vaccine treatment had led to the recurrence of cases of dysentery. Immunisation was said to be effective for a year. Noguchi, in Tokyo, had also given oral vaccines, and claimed that morbidity had been reduced by half, with a lowering of mortality.

Dr. F. D. TURNER said it was his practice at Colchester to regard as dysentery all cases of diarrhœa with mucus, and to isolate the affected patients for ever; but, even so, dysentery had not been stamped out. He had never succeeded in getting any bacteriological confirmation of dysentery. He asked Dr. Paddle the duration of immunity induced by inoculation; was there any period of increased susceptibility during inoculation, and how long must isolation of a ward continue after inoculation had been carried out?

Dr. THOMAS LINDSAY, superintendent of Caterham, said that while Dr. Paddle had been at Caterham he had always been anxious for an isolation hospital to be built in which all suspected cases of dysentery could be isolated for life. However, though they had never taken this measure, which Dr. Lindsay felt would amount to cruelty in some cases, he thought they now had complete control of dysentery in the hospital.

Dr. J. J. B. MARTIN introduced a note of caution; he had recently been, he said, at a hospital saturated with dysentery, where patients were not only inoculated but were inoculated regularly four times a year; in spite of this, dysentery remained prevalent, though some of the patients had an agglutination titre of more than 500. They had done the same thing as Dr. Paddle but over a longer period and with a greater number of patients, and they had found much greater individual variation. They had obtained their highest titres by intravenous injection; by oral administration they had found it difficult to get a titre of even 20. They had used a vaccine made from ZX strains, not with Flexner W. He thought that dysentery outbreaks went in waves, and that some variant in the type of Flexner bacillus might cause an epidemic in spite of inoculation, even in patients with a R.T. of 500. On the other hand, inoculation did modify the severity of the disease, though it would not get rid of carriers; indeed, patients might become symptomless carriers as a result of inoculation. The opinion of medical officers in India was that inoculation had a modified value; and probably the people to be inoculated in a mental hospital were the new admissions.

Dr. A. C. SINCLAIR said he was at present at the hospital, mentioned by Dr. Martin, at which dysentery was endemic. There had been a fresh outbreak recently in which the causative organism had been Flexner W; inoculation had been with the ZX vaccine. In order to culture the organism, rectal swabs were taken with a Higginson syringe, and the material inoculated into broth at the bedside; after half an hour cultures were plated out from the broth, and it was found that it was usually possible to get the organism by this method.

Dr. SYDNEY MANN asked Dr. Paddle how often, in relation to the blood findings, he would reinoculate. Answering Dr. Martin's criticism, he said that it was impossible to produce complete immunity, and the patient's resistance to the disease would depend upon the dose to which he was subjected. In a hospital "saturated" with dysentery the dose would be intense. The type of vaccine used by Dr. Paddle might be called an autogenous L.C.C. vaccine, and it

had done the job without producing ill effects. He thought it was important to have a vaccine made from the organisms of the first case in an outbreak, and he believed this would prove more successful than stock vaccines.

Dr. A. A. W. PETRIE asked what effect inoculation had upon the symptomless carrier who kept epidemics going; patients of this kind might show nothing more than a slightly loose stool on a single occasion, yet they might be passing bacilli in large numbers. Negative findings in the laboratory might be due to a change in the type of bacillus; at Banstead, dysentery had usually been due to Flexner organisms, but in one outbreak a series of negative results had proved to be due to a Sonne infection, for the culture of which slightly different technique was needed.

Dr. PADDLE, in replying, said that success with inoculation depended on giving the vaccine as soon as possible after the development of the primary case. He had had no experience of oral vaccines. In order to get a positive bacteriological result it was essential to plate the material at the bedside as soon as a stool was passed, or else to take a rectal swab. It was not easy to give a definite estimate of the duration of immunity; he thought that in a minority immunity lasted about 4½ months; in most patients it lasted 1–2 years. There was no evidence that patients were more susceptible during the time they were being immunised. Judging by the titre, immunity developed within 3 days of inoculation and reached a maximum in 7 days; but McCartney considered that immunity was relative and differed from day to day and sometimes from hour to hour. If a person encountered a sufficient dose of a virulent organism he would get dysentery though he had been immunised. He agreed with much that Dr. Martin had said, but he saw no reason why dysentery should not occur in patients with a titre of more than 500: were we justified in supposing that titre and immunity went hand in hand? In a hospital for mental defectives the problem was largely one of low-grade "wet and dirty" patients. He thought it quite understandable that cases due to the W type should appear in patients inoculated with a ZX vaccine. The vaccine used at Caterham had contained all the likely organisms.

LIVERPOOL MEDICAL INSTITUTION

A MEETING of this institution, held on Nov. 18th with Prof. R. E. KELLY, the president, in the chair, was devoted to

Thyrotoxicosis

Prof. HENRY COHEN said that few subjects were more appropriate for discussion. Despite the prevalence of thyrotoxicosis its nomenclature was confused, its ætiology was unknown, its treatment was so irrational as to depend on the most primitive of therapeutic principles ("if thy right hand offend thee cut it off"), and its prognosis was so uncertain as to shake the reputation of many an experienced prophet. He doubted if it were possible to define it with greater accuracy than as "a state of intoxication dependent on the thyroid." The term hyperthyroidism was inappropriate, for the condition produced by continued intake of thyroid extract differed from Graves's disease in showing no change in the structure of the thyroid gland and no exophthalmos. Administration of the thyrotropic hormone of the anterior lobe of the pituitary produced characteristic changes in the thyroid: (1) colloid loss; (2) a change in the epithelium lining the vesicles, from cuboidal to columnar; (3) a decrease in the iodine content of the gland itself; and (4) an increase in the iodine content of the blood and urine. Moreover it caused exophthalmos, even in thyroidectomised animals, unless the superior cervical ganglia had been removed. The effect of thyrotropic hormone, however, was only temporary, for an antithyrotropic principle developed in the blood which inhibited the stimulation of metabolism by the thyrotropic hormone, though it had no effect on the stimulation of metabolism by thyroxine. Normal animal and human blood had a slightly inhibitory action on the thyrotropic hormones, but the blood of a patient suffering from Graves's disease had none. Recently the antithyrotropic principle had been obtained in powder form, and it was clear that its effect was not due to iodine. Prof. Cohen had seen many cases of acromegaly with associated thyrotoxicosis. On the other hand, where the pituitary gland had been examined in fatal cases of thyrotoxicosis no gross definable abnormality had been observed. Caution, however, was necessary in interpreting these negative findings, because very slight changes might give rise to severe bodily disturbances, as was seen from the influence of a minute basophil adenomata of the anterior lobe of the pituitary.

An attempt had been made to divide cases of thyrotoxicosis into two main types: (1) Graves's disease, associated with exophthalmos and a diffuse hyperplasia of the thyroid, seen in young patients with dominantly nervous symptoms and subject to spontaneous remissions and relapses; and (2) Plummer's disease, in which the goitre was nodular and eye signs absent, seen in older patients with dominantly cardiovascular signs, and usually more progressive. It had been suggested that the former were more likely to have a pituitary origin, and the latter to be true examples of hyperthyroidism. But while it was true that typical examples of these two main types existed, a very large proportion of cases had features common to both; moreover, even with nodular goitre, there were diffuse hyperplastic changes in the non-adenomatous areas of the gland. These attempted classifications took little heed of the rate and intensity of action of toxins, and the soil on which they were acting.

It was important to recognise that thyrotoxicosis appeared in various guises which obscured the classical features. The presenting symptoms of "masked" thyrotoxicosis were, in Prof. Cohen's experience, mainly: (1) *cardiovascular* disorders, including auricular fibrillation, hyperpiesis, and cardiac failure; (2) rapid *wasting*, especially seen in middle-aged males with a good appetite, often mis-diagnosed as diabetes because of the slight glycosuria so common in thyrotoxicosis; (3) *diarrhœa* with, rarely, other gastro-intestinal symptoms, occasionally including intractable vomiting; (4) *psychotic* manifestations; (5) *nervous* manifestations, of which ophthalmoplegia and amyotropic lateral sclerosis were the main but rare examples. He regarded factors such as psychic trauma, infections, sex cycles, and reducing cures as activating rather than causative. In his view estimations of basal metabolic rate were unnecessary for diagnosis; all accessory tests, whether of metabolic rate or electrical impedance, measured levels and trends, but more important was the duration of the toxæmia and its effect on tissues, and this could be estimated only by clinical observation.

Plummer's work on iodine had revolutionised the therapy of thyrotoxicosis. But though rest, iodine, and X ray treatment might cure the mild case in which psychogenic activation played a part, a

subtotal thyroidectomy, after adequate preparation, was the treatment of choice for the vast majority of patients, and should not be delayed. The results in cases conforming to the Graves type were perhaps less satisfactory than in those of the Plummer type. All cases should be carefully followed up, and residual or recurrent thyrotoxicosis dealt with immediately. When all was said and done, however, surgery remained a confession of failure, and it was to be hoped that work on the rôle of the pituitary might yield a more rational therapy.

Mr. J. B. OLDHAM said that at present surgical treatment was the best we had to offer the patient. The immediate mortality in reputable clinics had fallen almost to vanishing-point, some 90 per cent. of the patients were rehabilitated, and recurrences were rare. It must, however, be admitted that in a proportion of cases the exophthalmos was not cured and mild subjective symptoms remained. In America it was the custom to operate on all cases as soon as a definite diagnosis was made; but some at least of the mild cases could recover with medical treatment, and in this type of case non-operative treatment should be attempted if the patient could afford the time and money. Mr. Oldham emphasised that medical treatment did not mean simply rest and iodine but must be a broad régime, including prophylactic, dietetic, hygienic, medicinal, psychotherapeutic, and other measures. Iodine should not be used in the non-operative treatment of toxic goitre except in an emergency such as thyroid crisis. It was unfortunate that many of the profession had the impression that iodine in itself was a curative agent; given a false sense of security by the temporary benefits derived from its use, they persevered in non-operative treatment until the best moment for surgery was long past. He was convinced that iodine given for weeks or months lost its power to improve the patient, which meant that its help was not available when it was most needed—at the time of operation.

Mr. Oldham held that almost all cases, except early ones in young patients with primary thyrotoxicosis, should be treated by subtotal thyroidectomy as soon as the diagnosis was made. Complications occurred in neglected cases and although surgeons were able to get extraordinarily good results in these serious cases that was no excuse for leaving the patients till they were very ill. For thyroid crisis he had found the oxygen tent of singular value.

During the last four years Mr. Oldham had operated on 186 cases with 3 deaths. He had used Avertin with gas-and-oxygen in all but one case, and this was the only one in which there were any pulmonary complications. He used surgical diathermy for the skin incision and for dissecting up the skin-flaps. As a rule he did not divide either the platysma or infrahyoid muscles. In every case in this series a one-stage subtotal resection was done, and it was his belief that the less thyroid left behind the less likelihood there was of post-operative crisis or residual symptoms. He found that he was draining fewer and fewer cases as his experience increased and that the most perfect scar was given by interrupted eversion sutures of silkworm gut, removed on the second or third day after operation. Mr. Oldham admitted that he followed the usual habit of giving iodine after operation, but he failed to see the logic of it provided full iodinisation had been produced before operation and a sufficient amount of the gland had been removed.

Dr. ROBERT COOPE spoke on the association of hyperthyroidism with pancreatic disorder. In 1912 Cohn and Peiser had recorded 5 cases of inflammation of the pancreas associated with hyperthyroidism, while Holst, Garrod, and other writers had described cases of hyperthyroidism in which autopsy revealed atrophy and other lesions of the pancreas. The association of glycosuria with hyperthyroidism was moderately common, but not as common as was sometimes assumed. John (1928) found hyperglycæmia in less than 10 per cent. of his cases of hyperthyroidism, and noted that the loss of sugar tolerance did not run at all parallel with the severity of the hyperthyroidism. In Dr. Coope's experience true diabetes mellitus accompanied by hyperthyroidism was very rare. In the last few years he had seen three patients suffering from true diabetes mellitus in whom careful examination revealed a real but quite mild hyperthyroidism. All were under 35 years of age. They were given X ray therapy to the thyroid gland; two of them, who previously needed 12–15 units of insulin a day to keep them "standardised," were afterwards able to take the same controlled diet without any insulin, while the third was enabled to reduce his daily dose from 50 to 17 units. But though these patients were "cured" of their hyperthyroidism, they still remained diabetics, though of milder degree; even those no longer needing insulin could not abandon dietetic control without a reappearance of hyperglycæmia and glycosuria. The disturbance of carbohydrate metabolism in this type of case was not due to thyroid "toxicity"; the hyperthyroidism put a strain on an already weak link, so revealing a tendency, previously unsuspected, to diabetes, or making an obvious diabetes more severe.

Mr. PHILIP HAWE said that the diagnosis of thyrotoxicosis was not always easy, and it was of paramount importance to exclude cases of neurovascular asthenia, early phthisis, and early mental disease. Some help was to be obtained by noting the effect of iodine treatment on the patient's condition. It was difficult to assess the value of impedance angle tests, and although these might replace ordinary basal metabolic estimations the clinical features of the case should have priority in reaching the diagnosis. Although Mr. Hawe favoured the one-stage operation he had recently, in a few cases with very advanced myocardial damage, used a two-stage procedure with satisfaction. Possibly the advantage of a shorter operation in such cases outweighed the risk of a post-operative thyroid crisis, which seemed less likely to occur when a very large proportion of the gland was removed.

Prof. JOHN HAY said that if objection was offered to the term "masked" thyrotoxicosis the condition might be referred to as "easily missed." In these patients the underlying thyrotoxicosis was camouflaged by some more obvious clinical manifestation, such as cardiac irregularity, cardiac failure, or gastro-intestinal disturbance. But as operation was undoubtedly the most satisfactory line of attack and successful treatment depended on early treatment it was of the utmost importance that the atypical form of thyrotoxicosis should be recognised as soon as possible. Exophthalmos was often absent or slight, and the thyroid was not necessarily enlarged. Thyrotoxicosis should be suspected when tachycardia was associated with loss of weight (a loss of weight that continued in spite of rest in bed and a good appetite), or when the tachycardia was associated with a rise in blood pressure and a simultaneous rise in pulse pressure. In thyrotoxic tachycardia the mitral first sound often had a sharp, snappy quality that should arouse suspicion. Again, paroxysmal auricular fibrillation or persistent fibrilla-

tion in the later decades would in itself suggest thyrotoxicosis.

Dr. T. F. HEWER said it was often impossible to offer any opinion as to the toxicity of a goitre on histological grounds. Iodine medication before operation altered the histological appearance of an otherwise typical Graves's disease and quite often apparently simple colloid or adenoparenchymatous goitres were clinically toxic.

Dr. ROBERT KEMP said that an attempt to divide thyrotoxicosis into the two main clinical groups—diffuse toxic goitre and nodular toxic goitre—seemed necessary when the results of treatment were reviewed. In following-up a group of 90 cases operated on, containing equal numbers of both types, "complete cure" was found in 70–80 per cent. of the nodular toxic group, whereas there were residual symptoms in all but 30–40 per cent. of the diffuse toxic goitres. It seemed clinically that the toxicosis of nodular goitres was mainly thyrogenic, corresponding with the results of administering thyroid substance or thyroxine; hence thyroidectomy was fairly rational and gave good results. On the other hand, the picture of diffuse toxic goitre resembled experimentally produced "pituitary thyrotoxicosis." Here, where the principal mechanism was untouched, operation was not likely to be so successful. It was in such cases that Loeser's antithyrotropic substance would probably be of great value.

Dr. G. F. RAWDON SMITH emphasised the desirability of not refusing operation to patients desperately ill from one of the complications mentioned by Prof. Cohen; he gave three illustrations from his own practice, in which the patients, though not cured, had been able to resume their ordinary avocations after operation.

REVIEWS AND NOTICES OF BOOKS

Control of Tuberculosis in England, Past and Present

By G. GREGORY KAYNE, M.D., M.R.C.P. Lond., D.P.H., Deputy Medical Superintendent, County Sanatorium, Clare Hall, Middlesex. London: Humphrey Milford, Oxford University Press. 1937. Pp. 188. 8*s*. 6*d*.

A GENERATION has passed since, in 1908, the State began its administrative control of tuberculosis by issuing regulations for the notification of certain groups of persons suffering from phthisis. The time is opportune for a survey of the steps taken in the past and for consideration of the efforts to be made in the future to deal with a disease which still causes a formidable mortality amongst those in the prime of life. Individual enterprise showed the need and began the attack on tuberculosis: Bodington in England opened the first sanatorium, and Sir Robert Philip in Scotland began dispensary work at Edinburgh in 1887. Gradually the growing public health service was compelled to take a part, but despite development and some new contributions, the movement lost drive and the ideas on which it was based were more fully worked out abroad. Dr. Kayne divides his book into three parts, the first covering the period before 1908, the second from that date up to the present day, while in the third he considers the problem now, discussing the merits and shortcomings of our present methods and the possibilities for improvement. The last part properly brings under review not only purely administrative but also certain clinical aspects of the disease. Ample statistical tables illustrate the text which is fairly and lucidly set out.

Dr. Kayne has used his tenure of the Dorothy Temple Cross Research Fellowship to good purpose, and embodies here the experience he derived from his study on the Continent. Though private treatment will not be wholly abandoned, especially for the well-to-do, he forecasts an increasing State control, for "the preservation of the health of the population will come to be regarded on the same footing as national defence or police supervision." He is zealous for the really effective care of the patient and for thorough investigation of the family: he would not relinquish the control of any patient till the last tubercle bacillus disappears from the gastric lavage, and the dossier contains the radiogram of every contact. Group radiography too must have an important place. While the numbers of contacts examined annually hardly exceeds the number of new cases discovered, and while the use of radiology in dispensaries is still limited, there is no room for complacency though recent years have shown the beginning of a new phase of energy and enthusiasm. Dr. Kayne thus reflects not discontent alone but also optimism and concentrates the beam in an illuminating and stimulating way. All interested in tuberculosis in its varied aspects, especially members of public and private bodies concerned with public health, would do well to study its pages, though of course its special appeal is to the medical reader. The volume is one of the Oxford Medical Publications and its production maintains the high standard of that series.

Medico-Legal Aspects of the Ruxton Case

By JOHN GLAISTER, M.D., D.Sc., Barrister-at-law; Regius Professor of Forensic Medicine, University of Glasgow; and JAMES COUPER BRASH, M.D., F.R.C.S. Edin., Professor of Anatomy, University of Edinburgh. Edinburgh: E. and S. Livingstone. 1937. Pp. 284. 21*s*.

THIS record of the conscientious reconstruction of the Ruxton remains is a classical contribution to forensic medicine. The Ruxton case was the first in the criminal records of this country in which two separate identities were established solely by accurate and highly skilled reconstruction of remains. Identity was not disputed in the Mahon or Thorne cases, and both the Voisin and the "trunk murder" remains were identified principally by laundry marks. The Crippen case hung on two slender points for identity, and in an American case alone, that of Parkman, is there any precedent for the magnitude of the undertaking embarked on by Glaister and Brash. To the general medical public this lavishly illustrated, quietly written book, provides a revelation of modern forensic ingenuity. Soft and skeletal tissues, hair, teeth, sex, age, stature, special characteristics, finger nails and prints, feet, identity by super-imposition upon previous studio or other photographs, are discussed in turn in a manner almost Hunterian in its application of foundation to argument. When Dr. Glaister says: "I formed the opinion that——" we soon learn to expect a judicious mixture of scientific reserve, facts neatly marshalled by an unassailable technique, and a conclusion based on sound premises. Here is no witness "for the prosecution," but for the truth. It is noteworthy that no single point in the scientific evidence given in the case was brought into question by the defence, and no opinion refuted.

Those engaged in the practice of forensic medicine, whether in the mortuary, the laboratory, or in court practice, will find here perhaps the most detailed atlas of identity ever published; a practical manual and a reference book in one. Many details of the investigations that did not come out in evidence are here supplied in the form of notes or appendices, and 172 photographs which alone merit hours of study. The expert may wonder why no precipitin test was performed on the famed cyclops eye, and why the blood stains, so faithfully examined in other ways, were never grouped. It is remarkable that nothing else that had to be collected seems to have been omitted from the welter of evidence.

Adaptation in Pathological Processes

By WILLIAM H. WELCH, M.D., LL.D. Reprinted from Transactions of the Congress of American Physicians and Surgeons, 1897, Vol. IV, pp. 284–310. With an introduction by Dr. SIMON FLEXNER. Publication of the Institute of the History of Medicine, Johns Hopkins University. Baltimore: Johns Hopkins Press; London: Humphrey Milford, Oxford University Press. 1937. Pp. 58. 7*s*.

THE subject of adaptation was topical if not original when this address was written forty years ago, but the application of arm-chair evolutionary philosophy has been so overdone in addresses of all kinds that we doubt if the average reader will find much to interest him in this reprint. It is understandable that the Institute of the History of Medicine of Johns Hopkins University should as an act of piety publish this old address by one who became part of the legend of that great school, and doubtless many of its members will treasure it on their shelves. Whether or not Welch's genius as a pathologist justifies the rest of the world regarding him as a "classic" is questionable.

Kirschner's Operative Surgery

Vol. III. *The Ear, Air Passages and Neck.* Translated by I. S. RAVDIN, B.S., M.D., Harrison Professor of Surgery, University of Pennsylvania; and GEORGE M. COATES, A.B., M.D., Professor of Otolaryngology, Medical School of the University. London: J. B. Lippincott Company. 1937. Pp. 528. 50*s*.

THIS book is a translation of the third volume of Kirschner's "Lessons in Surgery" which was written by Lautenschläger of Berlin and Kleinschmidt of Wiesbaden. It describes in considerable detail the surgery of the head and neck, excluding cerebral surgery, and although a great part of the book is necessarily devoted to the specialties of otology and laryngology, there is much in it which the general surgeon may study with profit. Its outstanding feature is the magnificence of the pictures, most of them in colour, recalling in accurate detail and artistic effect the plates which illustrated the classical atlases of anatomy. The work is remarkably free from printing errors, a slip in the legend of Fig. 232, and the use of "of" for "to" on p. 346 being the only ones we have noticed. A curious use of the word "unilateral" occurs on p. 388, since there is no doubt that it refers to what is usually called "one-stage" resection as distinct from an operation "in two stages." Chapters dealing with the ear, including otitic cerebral abscess (the only reference to intracranial surgery), the nose, the larynx, and the trachea are followed by a description of bronchoscopy and œsophagoscopy; but operations on the pharynx and the cervical œsophagus are inserted near the end of the book. These are particularly good, an excellent description being given of the various approaches to the pharynx, and of the operations for pharyngeal diverticula.

The section on surgery of the neck includes references to all the important operations on the muscles, vessels, and nerves in this region, and details are given of the treatment of abscesses and tumours, together with an adequate consideration of the surgery of the thyroid gland. It is interesting that operations named in this country after British or American surgeons are credited in this book to continental surgeons, and often we are left wondering who has the better claim to priority. The translators evidently share this feeling, for many short notes have been inserted, particularly in the thyroid section, in an attempt to give credit where it is due. It is extraordinary that there should be any substantial variation in surgical technique to-day in different parts of the world considering how far surgeons travel and how widely surgical literature circulates; but a study of this volume draws attention to these variations, and being a most readable translation performs the valuable function of bringing the continental methods within the reach of a large number of English-speaking surgeons.

Biological Standardization

By J. H. BURN, M.D., Professor of Pharmacology at the College of the Pharmaceutical Society, London University. London: Humphrey Milford, Oxford University Press. 1937. Pp. 288. 21*s*.

THE development of biological standardisation in the past decade is well illustrated by a comparison of this volume with its predecessor entitled "Methods of Biological Assay" published in 1928. The book has been entirely rewritten and covers adequately all those pharmacological assays which can be regarded as established.

The first chapter contains a discussion of the units of measurement and the argument for the use of methods of assay which take the form of comparison with a dry stable standard sample of the active principle that is being assayed. The author emphasises the necessity of using such stable standards, for it is still not uncommon for the activity of preparations to be stated in terms of zoological units. This use of a standard preparation was invented by Ehrlich many years before the late war in his classic method for the standardisation of diphtheria antitoxin, and it is remarkable how long it took for the principle to be accepted in other methods of biological assay. Prof. Burn classifies the methods used and the statistical problems involved in biological assay. He gives a very clear account of the influence on the accuracy of determination of variation in the response of individual animals, and discusses the many methods devised in the past few years for assessing the errors thereby introduced. This book will serve to make available to a wide circle work which is only too often described by experts responsible for it in terms which, though strictly accurate, are obscure; unfortunately continued preoccupation with algebra seems to breed a prose style which conveys as little as the formulæ to the unmathematical among us.

The large number of methods for standardisation of various physiologically active substances here described are, for the most part, methods that have been used in Prof. Burn's laboratory; many have been actually worked out there. The account of the methods is sufficiently detailed to enable any pro-

perly trained pharmacologist to carry out the test without any further help. All those small points of technique so often omitted are here set out.

Apart from its use as a reference book in laboratories where routine biological standardisations are carried out, this book deserves study by anyone who is concerned with the evaluation or production of new remedies. We would particularly commend it to the attention of biochemists, organic chemists, and even practising physicians. The question whether a new drug is as good as or better than an old one is in essence a problem in biological standardisation. The determination of its place in human medicine primarily depends on an animal which, if higher in the scale, is just as subject to variation as a guinea-pig; and the experiments on man which are necessarily associated with the popularisation of any new remedy should therefore be based on such principles as those set out in this admirable book.

Diseases of the Ear, Throat, and Nose

By J. DOUGLAS MCLAGGAN, M.B., F.R.C.S. Eng. and Edin., Surgeon in charge of the Ear, Nose, and Throat Department, Royal Free Hospital; Surgeon, Central London Throat, Nose, and Ear Hospital. London: H. K. Lewis and Co. 1937. Pp. 338. 15*s*.

THIS is a straightforward and sensible book. Mr. McLaggan has given an unusual amount of space to anatomy, because he believes that a working knowledge of this is more conducive to sound diagnosis and treatment than is a list of drugs and proprietary preparations. The prescription of at least a few well-tried remedies would, however, have been appropriate; both internal and local medication are needed in the treatment of some diseases, but there is almost no indication that the author recognises their value. The section on the ear is particularly good; the suppurative diseases and their complications are well described, and the advice given on their management is sound. The recommendation that the packing be removed in 4 or 5 days after the radical mastoid operation and not replaced takes no account of the danger of excessive granulation, and contraction is not discussed. Mr. McLaggan is unduly pessimistic about the value of hearing-aids; of the non-electrical type he mentions only "the speaking-tube and its modifications," and he is altogether silent about valve amplification for electric aids. The only advantage he allows to the older microtelephone instruments is the production of a noise which assists hearing in a patient with paracusis, whereas the chief aim of the designers of electrical apparatus is to abolish this background noise. His discussion of the indications for tonsillectomy is very sound; the operation by dissection is described but not that with the guillotine. The risk of hæmorrhage occurring after the operation is not mentioned. Numerous clear diagrams illustrate the text, and some good radiograms enhance the value of a book which should certainly be useful to the general practitioner.

The Ego and the Mechanisms of Defence

By ANNA FREUD. London: Hogarth Press and the Institute of Psycho-analysis. 1937. Pp. 196. 9*s*.

PSYCHO-ANALYSIS in its early days was concerned with repression, pictured as a conflict between unconscious impulses and a repressing force or resistance which was overcome in the analytic process. Later developments have called for altered conceptions; the ego, that part of the personality in contact with reality, is now differentiated from the super-ego, a watchful critic whose demands the ego must meet in dealing with the impulses arising from the id. The id takes the place of the older conception of the unconscious and contains the primitive instincts, the super-ego itself being now conceived as partly unconscious.

These altered conceptions have been paralleled by alterations in methods of analysis. The ego is compelled to find a compromise between the relentless super-ego and the instinctive impulses, and in doing so develops mechanisms of defence which may appear in alterations of behaviour or in psychoneurotic symptoms; thus analysis has been compelled to turn its attention to the super-ego in place of confining itself to the unveiling of the repressed impulses themselves. The ego of the adult neurotic, says Sigmund Freud's daughter, fears the instincts because it fears the super-ego; its defence is motivated by super-ego anxiety.

These theoretical conceptions have been formulated in order to express clinical observations under general formulæ, and the reader will find here ample examples making the conceptions more easy to understand. Thus the harmful development of a super-ego is shown—"the parents' example, which the super-ego makes its own by the process of identification, must be the expression of their real human weaknesses and their tolerant attitude towards the instincts, instead of a pretence of an over-strict moral code which it is quite impossible to put into practice." The general theme of this book is a description of the various mechanisms of defence as they appear in symptoms or behaviour, and anyone who would wish to keep in touch with the development of psycho-analytical theory and its application to real problems will need this book. The translation is into correct and idiomatic English.

A History of Pharmacy

By JAMES GRIER, M.Sc., Ph.C., formerly Senior Lecturer in Pharmacy, Victoria University of Manchester. London: Pharmaceutical Press. 1937. Pp. 274. 6*s*.

WHETHER the pharmaceutical curriculum is overcrowded already is a matter of opinion but the recent addition to the examination syllabus of the history of pharmacy has provoked Mr. Grier's book. It would appear from the preface written by the vice-dean of the College of Pharmacy that it is intended as a text-book, but we prefer the author's estimate of it as "a readable book . . . of interest to everyone connected with pharmacy." So far as we know, it is the most complete historical survey of medicaments in the English language. The story about the grocers and the apothecaries, and of the quarrels between physician and compounder three centuries ago, is there all right but the author reserves most of his space for things that have been told less often, and he shows how painstaking and how wise were the forefathers of medicine and how modern practice is indebted to them. Raw liver, it seems, was prescribed by Egyptian physicians three thousand years ago; the lungs of a fox were expected to cure consumption because the fox was a long-winded animal, and the grease of a bear was supposed to cure baldness because the bear is a very hairy beast. Manifestations of similar beliefs were not altogether absent from the recent medical exhibition. One of the most interesting sections of the book recalls the isolation of the active principles of vegetable drugs. Strychnine, the first alkaloid to be used in medicine,

was obtained from nux vomica 120 years ago. Opium, one of the items in the Ebers papyrus, was not displaced by morphine until the middle of last century. Cinchona bark was known to the Incas of Peru before the Spanish conquest in 1540, but quinine was not introduced to medical practice until nearly three hundred years later. Valuable too are the chapters on chemical drugs and synthetic products, treated historically. In the chapter on sophistication the author recalls the part played by THE LANCET in the passing of the Adulteration of Food Act of 1860. Nine years earlier analyses published in our columns had shown that "nearly all the most useful and important articles of the materia medica were grossly and systematically adulterated, often to an enormous extent." At that time, the author remarks, America was obliged to appoint inspectors to examine the imports of drugs and to order the rejection of consignments which were sophisticated. The only criticism of a book so full of information and usefulness is the choice of illustrations.

The Truth about Vivisection

By Sir LEONARD ROGERS, K.C.S.I., LL.D., M.D., F.R.C.P., F.R.C.S., F.R.S., Hon. Treasurer, Research Defence Society. London: J. and A. Churchill. 1937. Pp. 182. 5*s*.

IT is clearly the doctor's business to know on what basis his profession rests and to defend it with vigour and knowledge. His answers to a patient's inquiry on the subject should be well informed and outspoken; for antivivisection propaganda is aimed at the very root of all orthodox medical belief and practice. This excellent little book can be commended therefore not only to the general public but also to medical men, many of whom will (or should) wish to be informed of the present position of vivisection. It would be hard indeed to find anyone so well qualified to explain it, both by high distinction in medical research and by devotion to the cause of truth, as is Sir Leonard Rogers. His account is logical, fair, and interesting, and should convince any reasonable and intelligent reader of the necessity for experiments on animals. All the stock arguments of the antivivisectionists, most of them well outworn, are answered, and the whole business of licensing and certification is accurately explained. It is unfortunate that whereas the antivivisection societies have large sums of money (a total annual income of about £40,000) entirely devoted to clamorous and not too scrupulous propaganda, practically no effort or money is devoted to the defence of research. The reason is that those who believe in medical research are either wholly occupied in its pursuit or else regard its position as so impregnable as to need no defence. There are some too, perhaps, but we think not many, who, so long as they can enjoy the fruits of research while evading any obloquy attached to it, are content to be indifferent or to hedge. Education, Sir Leonard concludes, is the only remedy. If the teaching of elementary physiology formed a part of general education (as very sensibly urged by Dr. L. P. Lockhart[1]) it would soon be apparent to everyone that the antivivisection campaign is wholly mischievous and against the common good, and the occasional doctor who thinks fit to lend his name to such propaganda would not be able to get away with it.

[1] *Lancet*, Nov. 20th, 1937, p. 1177.

NEW INVENTIONS

A CLAVICULAR SLING

THE sling (Fig. 1) is one which I have found particularly useful in conditions, such as fracture of the clavicle and dislocation of the acromioclavicular joint, where it is necessary to elevate the point of the shoulder. The ordinary triangular sling when used to exert pressure pulls the neck forwards and is uncomfortable and inefficient; when applied by the St. John Ambulance method it is more effective in raising the shoulder but equally uncomfortable. The sling I have devised takes the weight on the sound shoulder, the loop passing under the normal axilla being adjusted quite loosely. The same sling can be used for either arm. Daily abduction of the shoulder-joint can be done by the masseur by supporting the point of the elbow and undoing the two larger buckles.

For fractured clavicles and dislocated acromioclavicular joints I use in conjunction with the arm sling the brace illustrated in Fig. 2. It embodies no new principle, but is more comfortable than the two handkerchiefs method or the padded back-splint.

FIG. 1

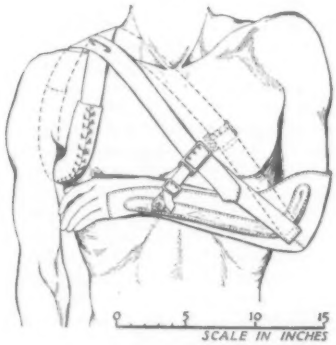
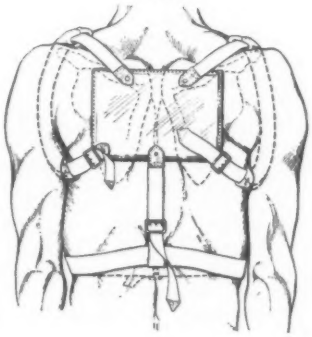


FIG. 2



The belt round the waist prevents the brace from slipping upwards.

The sling and brace are made by Mr. G. W. Baker of the Wingfield-Morris Workshops, to whom I am indebted for suggestions in their construction.

D. C. CORRY, M.D. Lond., F.R.C.S. Eng.,
Assistant Surgeon and Surgeon with charge of Fractures, Radcliffe Infirmary, Oxford.

THE LANCET

LONDON: SATURDAY, DECEMBER 4, 1937

IMMUNISATION AGAINST TYPHOID

RECENT events in Croydon have inevitably raised the question of the usefulness of prophylactic immunisation with a typhoid or T.A.B. vaccine in combating an outbreak of enteric fever in a country with highly developed sanitary services. The answer depends on a number of different factors, each of which must be given due weight. Active immunisation, of which anti-typhoid vaccination is an example, suffers from the disadvantage that it demands a response by the tissues of the vaccinated subject, and that this response takes time. Assuming the customary two injections at an interval of a week or ten days, it is probable that the most effective response of which the subject is capable is not attained until twenty to twenty-eight days after the first dose of vaccine is administered. This method has, however, the advantage that the increased resistance, when once attained, lasts over a relatively long period, certainly over many months and probably over a year or two. It follows that active immunisation will exert its maximal effect on persons who are unlikely to be exposed to the risk of infection during the few weeks following the injections of vaccine, but who will then be exposed to an appreciable risk over a relatively prolonged period. An obvious example is a regiment going abroad for duty in an area where enteric infection is endemic and the sanitary services are deficient.

The conditions that obtain at the outset of a typhoid epidemic in this country are altogether different. Our sanitary services have attained a high level, a fact sufficiently attested by the general interest that an occasional breakdown awakes. Most outbreaks within recent years that have involved more than a very few cases have been milk-borne or water-borne. In such epidemics large numbers of persons are infected within a short space of time. By the time the first case is notified many other persons will be incubating the disease. Once the existence of the epidemic has been demonstrated and the source of infection traced—a procedure that, with our well-organised health services, seldom takes more than a few days—the main path of infection is stopped, and the risk to those living in the area becomes almost negligible. There will, it is true, generally be a few contact infections; but any significant spread in an area with modern water and sewage services is very unusual. The actual conditions obtaining are thus those of a risk which is at its highest before an epidemic has made its appearance, and which rapidly decreases to negligible proportions. Active immunisation will clearly be in the worst possible position.

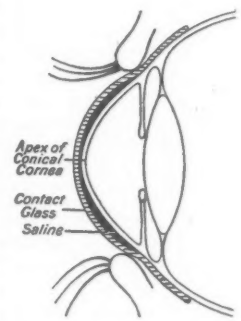
It might reasonably be argued, however, that the fact that a particular prophylactic procedure is unlikely to do much good is no reason for not letting it do the little good it can. Here we are on rather more difficult ground, but we have a considerable mass of data that will help us to a decision. There are at least two problems at issue. What changes in resistance occur during the days immediately following vaccination, and what is the effect of administering a dose of typhoid vaccine to a person who is already incubating the disease? There is a considerable amount of laboratory evidence that indicates the existence of a negative phase following the injection of a bacterial antigen. During this phase the titre of certain antibodies in the blood may be lowered, and it is possible, though less certain, that this connotes a phase of decreased resistance to infection. It would be unwise to stress this point too strongly. It is very probable that, within two or three days of the first inoculation of vaccine, a person's resistance is rather higher than before; and, if we were dealing with uninfected persons, it is possible that wholesale vaccination would slightly lower the incidence of the disease, or reduce its severity, though, for the reasons set out above, the chances of such a desirable result would not be high. In regard to the vaccination of persons already incubating the disease the position is different. In this stage the patient is already infected, and the bacteria are multiplying in his tissues, though no clinical signs have yet been produced. The transient effects of the negative phase, even if we regard them as negligible in an uninfected person, may well disturb an already changing balance between parasite and host to the disadvantage of the latter. Nor is this pure hypothesis. The numerous studies carried out in relation to the aggressive action of bacterial products have shown that the injection of killed bacterial cells into experimental animals together with sublethal doses of living bacteria may change a non-fatal into a fatal infection. There are many other analogies that might be cited. The action of tuberculin in the presence of tuberculous infection is one. Another, perhaps, is the general experience of those who have employed vaccine therapy in generalised acute, or subacute, infections that the doses of vaccine given must be very small, and very carefully graded, if dangerous reactions are to be avoided. The position might be fairly summarised by saying that there is no evidence that the injection of a large dose of typhoid vaccine during the incubation period is likely to do good, while there are many facts which suggest that it is quite likely to do harm. There is another practical consideration, though it may be of minor importance. If a person who has been vaccinated during the incubation period of the disease develops fever within twenty-four to forty-eight hours of the first or second injection, it is at least possible that it will be temporarily ascribed to the vaccine when it is actually due to infection, with resulting delay in the initiation of the appropriate treatment and in adequate isolation. Taking all these considerations into account, there would probably be a consensus

of opinion that the administration of a prophylactic dose of typhoid vaccine during the incubation period is a highly undesirable procedure. A water-borne or milk-borne epidemic provides exactly the conditions in which this event is likely to occur. The area supplied by the infected water, or the houses supplied by the infected milk, will rapidly be known. It is clearly the persons living in this area, or in these houses, who are sustaining the greatest risk; and an unconsidered attempt at prophylactic vaccination would probably begin with these particular persons. But, in fact, the chances are high that these persons are either already infected or with due precautions will escape infection in the future, so that, on balance, more harm than good will very probably be done. The question of vaccinating those people who, while living in the same town or district, have almost certainly not been exposed to the transient risk from which the epidemic has derived, is on a different footing. It must depend largely on personal choice. It is quite unlikely to affect the general extent of the epidemic; and the risk of such secondary infection is so small that most persons, if fully informed of the facts, would probably take it in preference to the transient inconvenience of vaccination. If, however, any person living outside the area primarily involved desires this added protection, there would seem to be no reason for withholding it.

So far we have been considering active immunisation. Passive immunisation, induced by the injection of a specific antiserum, acts in a very different way. The protection, whatever may be its effectiveness, is exerted at once, and is at its maximum within twenty-four to seventy-two hours after a subcutaneous injection. Thereafter it gradually declines, and will probably sink to zero within a few weeks. This type of immunisation is, therefore, most useful when risk has already been run, when those persons who have run the risk are known, and when the risk is likely to be of short duration. These are exactly the conditions obtaining in a water-borne or milk-borne epidemic of typhoid fever. It happens that, in the case of this particular disease, an antiserum has been produced, as the result of studies by FELIX and his colleagues, which has given promising results on the therapeutic side. It is clearly desirable to see whether such an antiserum could not be utilised with advantage for the prophylactic immunisation of those exposed to the primary risk in such an epidemic as that which has occurred at Croydon; and we note with interest that an attempt along these new lines has in fact been made.

CONTACT GLASSES

IN the current issue of the *British Journal of Ophthalmology* more details are given of the origin and purpose of the contact-lens centre, recently opened at 18, Cavendish-square, which is the subject of a letter on another page. In 1931 one of the three signatories went to Budapest to investigate the elaborate method devised by Dr. JOSEF DALLOS to fit a contact lens to the particular shape of the individual eyeball. Two of his colleagues were so impressed by his description that they also visited Hungary, and returned determined to make the method available in this country, though they realised how much practice and skill were required to obtain successful results. The original scheme was to take moulds here and to send them to Budapest where a contact lens of the same shape would be ground and sent back; but observation of work at the clinic made it clear that repeated attendances by the patient and sometimes the construction and discard of several trial lenses before satisfaction was reached was the rule rather than the exception. Dr. DALLOS who is keenly interested in optical research work solved the geographical difficulty by independently approaching Messrs. Theodore Hamblin Ltd. and agreeing to take charge of the manufacture of contact lenses in England for this firm; and he has been engaged in this work for the last six months. The idea from the beginning was that the work should be made available for all ophthalmic surgeons and that its performance should be under their immediate control. This idea has been realised in the organisation of the new centre, where any ophthalmic surgeon will be able to carry out or supervise the fitting of his patients with contact glasses with the assistance of the skilled technicians there. No patient will be treated who is not sent or accompanied by a doctor. The centre is being run under the direction of an advisory committee of ophthalmologists which includes Sir JOHN PARSONS, F.R.S., Sir WILLIAM LISTER, Mr. LESLIE PATON, Mr. R. FOSTER MOORE, Mr. W. H. McMULLEN, and Wing-Commander P. C. LIVINGSTON. Its funds will be administered by this advisory committee, and plans for further development include a Samaritan fund for hospital patients, courses of instruction in the theory and practice of fitting the lenses, and research in various directions.



The essential difference between this method and the older ones [1] is the abandonment of any attempt to fit one of a standardised set of lenses, though these are used at a preliminary trial to gauge the visual acuity obtainable. Not only is it impossible to provide them in a large enough range of sizes to suit every patient, but scleral astigmatism is far more common than was at one time believed; and the discomfort endured when a spherical surface of glass is applied to an eyeball with an aspherical surface has limited the number of patients, otherwise suitable, who have hitherto been able to wear contact glasses. This drawback has now been surmounted by the expedient of grinding an individual lens for each patient.

[1] See *Lancet*, 1930, 2, 1067, and 1933, 2, 180.

The actual process involved is a laborious one. When the ophthalmologist has satisfied himself, by trial under cocaine of a standard contact lens of known optical power, that the patient is a suitable subject, he takes a mould of the eyeball, still under cocaine, by the application of Negocol, a vegetable hydrocolloid which is innocuous to the most delicate tissues. This procedure is said to be uncomfortable but not actually painful. Wax, plaster, and metal positives and negatives are made in succession, and from these, first in sheet brass and then in glass, is obtained a boat-shaped shell which almost exactly fits the eyeball. When this trial shell is applied to the patient's cocainised eye further adjustment is always found to be necessary; and this may be completed easily and rapidly or may take wearisome hours to perfect. Even if the moulds have turned out to be so good that the glass fits the sclera accurately, the central portion over the cornea and pupil has to be ground away so that this sensitive tissue is relieved of the pressure that actual contact would entail. But the space left between glass and cornea (which, as the diagram shows, will be filled with lacrymal secretion) must not be more than 0·1 mm. Much patience on the part of both technician and patient is required at this stage, and much skill in the former. It is often necessary to make as many as five or six trial shells before a perfect fit is obtained. The final shell is then copied in optical glass of which the outer surface is ground to correct the patient's refractive error. When the fitting is completed and the patient has learned to tolerate the foreign body and to manipulate it with ease the result may be miraculous from the functional as well as from the cosmetic aspect. The timid patient attending the centre in Cavendish-square can hardly fail to be reassured by the facility with which the instructor .removes and replaces her own contact glasses and by their invisibility when in situ. The technique of slipping them in and out of an eye flooded with normal saline is apparently not hard to learn. On the other hand, it is only when a patient has a good deal to gain that he is willing to make the effort to accustom himself to the strange sensation of wearing contact lenses. High myopes will benefit from the increase in the field of vision and in the size of the retinal image; aphakic patients will find their sense of disorientation abolished by the return of the apparent size of objects to normal and the loss of peripheral distortion; thus after extraction of one lens for cataract a monocular contact lens can be used to re-establish binocular vision. Surface irregularities such as conical cornea, irregular astigmatism, and faceted scars, give perhaps greater improvement in visual acuity than any other type of case.

There is no reason to suppose that contact lenses will be extensively used for the correction of ordinary errors of refraction. At present their cost alone [2] would prohibit their general adoption. It is for those who cannot get relief or help by simpler means that this centre has been started, and its facilities will be open to all ophthalmologists who wish to make use of them for this purpose.

[2] We have ascertained that this varies, with the power of the lenses, from about £5 a pair for hospital patients to £35 for private ones, excluding the ophthalmologist's fee.

CAMPAIGNS AGAINST PNEUMONIA

EVEN in America, where fine pioneer work has been done, fostered largely by private funds and donations, the specific serum therapy of pneumonia has made slow progress except in certain communities. Our correspondent from the United States drew attention last week to the report [1] of a special committee (which includes R. L. Cecil, J. G. M. Bullowa, and H. T. Chickering, published by the New York Academy of Medicine) on pneumonia as a medical problem of the first magnitude. Massachusetts gave a lead which has been followed by New York State in providing concentrated pneumococcus antisera free of charge and undertaking the bacteriological typing of pneumonia; these States also organise medical and lay education on more adequate means for the control of pneumonia and research into the epidemiology of the disease. The committee describe the problem as it affects New York City—where approximately 10,000 patients a year would benefit from serum therapy. They estimate the cost of treatment per patient and advise that "in view of the communicable character of the pneumococcic infections . . . the city should provide this serum on the same basis as it provides all other biologic products." They also recommend the establishment of a consultant medical service headed by a physician well trained in the knowledge and technique of serum therapy. This seems to us to be an essential step in any projected scheme for the community treatment of pneumonia; there is an excellent precedent in the work done by Dr. Roderick Heffron as organising director of the Massachusetts campaign. An adequate and convenient laboratory service is, of course, essential.

Meanwhile work continues on the specific treatment of pneumonia, notably on the less common pneumococcus type infections. Following the reports of Bullowa, Finland, and their associates, which we noticed a few months ago,[2] M. B. Rosenblüth and M. Block [3] describe the clinical features in a series of 68 patients suffering from type V pneumococcus pneumonia. It is obvious that as data accumulate definite clinical entities among the pneumonias, associated with the different pneumococcal types, are emerging. In the authors' series type V infections are, contrary to the common conception of the mildness and atypical character of "group IV" pneumococcal pneumonias, classical and severe with a high incidence of bacteriæmia and complications. The results of serum therapy in 39 cases, while encouraging, are not conclusive, and it is a pity that trials of a new antiserum by different workers, each in itself statistically valueless, could not be collected into one authoritative report. Another possible advance in the serum treatment of pneumonia arises

[1] *J. Amer. med. Ass.* 1937, **109**, 1323.
[2] See *Lancet*, 1937, **1**, 1121.
[3] *Arch. intern. Med.* 1937, **60**, 567.

from the discovery during the last few years that antibodies produced by the injection of the same antigen into different animal species may differ in their chemical and immunological characters. Some of the earliest observations of this kind were made in relation to passive anaphylaxis, and indicated that these differences were of importance in vivo. Thus Avery and Tillett (1929) and R. Brown (1934) found that guinea-pigs could be sensitised to pneumococcal polysaccharides by the injection of antisera prepared in the rabbit, but not by the injection of antisera prepared in the horse; and Mehlman and Seegal (1934) obtained similar results in the mouse. So far as passive protection is concerned, both horse and rabbit antisera will protect mice against the injection of living and virulent pneumococci; but Goodner and Horsfall (1936) have found that there is an optimal protective dose of horse serum, amounts greatly in excess of this failing to protect, while all amounts of rabbit antisera above the minimal protective dose are effective. The same authors (1937) note that the purified rabbit antibody is more protective, weight for weight, than the purified horse antibody.

A series of studies along chemical and immunological lines (Horsfall and Goodner 1936, W. F. Goebel 1936, Goebel and Hotchkiss 1937, Heidelberger and Pedersen 1937, Heidelberger, Kabat, and Shrivastava 1937, Heidelberger and Kendal 1937) have shown that the antipneumococcal antibodies produced in the rabbit and the horse differ in molecular size, that of the rabbit antibody being the smaller, in their relation to certain lipoid components of the serum, and perhaps in the nature of their active chemical groups. In view of all this evidence it was clearly desirable to test the therapeutic effect in man of antisera prepared in the rabbit; and Horsfall, Goodner, MacLeod and Harris (1937) have recorded the results of treating a small series of cases of lobar pneumonia with specific antisera prepared in this way. There were ten cases of type I infection, four of type II, three of type VII, and five of type VIII. Of these twenty-two cases only one died, and the cause of death was the rupture of an aortic aneurysm. These figures are clearly promising, and establish a case for further inquiry, though the numbers treated are too few to justify any conclusion on this series alone. It would seem, however, that crude rabbit antisera have at least as great a tendency as horse antisera to give rise to undesirable serum reactions; and a recent paper by Schiff (1937) suggests that the serum fractions concerned are identical, or very closely related. Goodner, Horsfall, and Dubos, in the current number of the *Journal of Immunology*, describe a method of processing rabbit antisera that greatly reduces their toxicity for man. It consists essentially in heating the serum at 56° C. for 30 minutes, adsorbing with kaolin, filtering, and again heating at the same temperature for the same time. They find, also, that it is possible to check the efficacy of this process by an empirical test in rabbits. Untreated antisera derived from rabbits, induce, when injected intravenously into animals of the same species, a well-marked febrile reaction, while antisera treated by heat and adsorption do not. Five antisera which induced in rabbits a temperature rise of 1·2° to 3·2° F. gave rise to marked reactions when administered to human patients. Eight antisera which induced in rabbits either no febrile reaction, or a rise in temperature of less than 0·4° F., caused no reactions in man.

It is far too early as yet to venture any forecast as to the possible replacement of the horse by the rabbit as the animal of choice for the production of therapeutic or protective antisera; but the issue has clearly been raised, and future reports will be awaited with interest.

GOODWILL AT MANCHESTER

COMPROMISE has happily been reached in the deadlock over the contemplated erection of a big Government building next to the central branch of the Manchester Royal Infirmary. When the position was discussed in our columns last April[1] the outlook was black. The one-story building which had housed the Labour Exchange was forthwith to be replaced by a five-story block which would blanket its neighbour, deprive the wards of air and light, overlook the windows, and make the central branch noisy, unhealthy, depressing, and useless for its purpose as a hospital. In the past few weeks the threat appeared to grow more grave. The First Commissioner of Works was writing to the chairman of the board of management in the rôle of the candid friend. Sir PHILIP SASSOON was pointing out that the hospital's troubles arose from its own lack of forethought. It had inconsiderately developed its branch site up to the extreme limits in unneighbourly fashion. Its original idea of an out-patient department had been misconceived. The patients had been lucky to enjoy sunlight hitherto. The Office of Works, explained Sir PHILIP, had bought an expensive site and must make the maximum use of it. It would be highly improper for his department to curtail the development of a dearly bought area for the benefit of a "private institution." When a great voluntary hospital had the mirror so firmly held up to it, there seemed nothing more to be done. The central branch, dealing with approximately half the casualties treated by the Royal Infirmary and containing moreover a valuable unit of 54 beds for in-patients as well as playing its part in medical teaching, would be unable to continue. Rate-aided service might have to replace voluntary effort. There was, however, a rift in the clouds. Sir PHILIP SASSOON's letter offered to delay the erection of the third and fourth stories of the interior block which would overlook the wards of the branch building. Last week representatives of the Royal Infirmary had an interview in Manchester with the architects of the Office of Works. The latter were willing to omit the two top stories of the new building for a length of 78 feet and to make other structural adjustments to prevent the overshadowing of the hospital. On Monday last the

[1] *Lancet*, 1937, 1, 877.

board of management unanimously accepted the offer and thanked the First Commissioner for his valuable concession.

It is not easy for a Government department to give way. The bureaucratic omnibus, as the *Manchester Guardian* observed at an earlier stage of the controversy, is fitted with every gear except reverse. All the more credit, therefore, is due to the decision of the Office of Works to modify its plan. A department which has done so much for the English countryside by the preservation and repair of historic buildings has shown that it can respect civic as well as national amenities. The central branch of the Infirmary is not an ancient monument but a living institution, private or otherwise. Goodwill has saved it; long may it prosper.

ANNOTATIONS

EXPERIMENTAL ANÆMIAS

In the last few years the idea that endogenous toxic factors might be responsible for anæmia has been somewhat discredited—except as regards sepsis. Recent experimental work, however, suggests that such factors in association with dietary deficiencies may be of considerable importance. Rhoads [1] finds that if he gives small doses of indol to dogs on a deficient diet, known as the black-tongue-producing diet, the dogs develop a severe anæmia. Red cell counts may fall below 1,000,000 per c.mm. and deaths from acute anæmia are not unknown. If the animal survives the immediate drop in blood levels there is a tendency to an improved blood picture even though indol is still given. The same amount of indol fed to a dog on a normal diet causes no anæmia, and the addition of liver extract to the black-tongue-producing diet inhibits the development of an anæmia or cures one that has already developed. Studies of the bone-marrow show an extension of active marrow during the anæmic stage; this hyperplasia affects chiefly the immature cell types. Similar results have now been obtained by Rhoads and Miller [2] using amidopyrine instead of indol. Since amidopyrine is known to cause agranulocytosis in certain human beings it is of particular interest to note that under the experimental conditions specified the white cell count was unaffected. The anæmia due to amidopyrine was prevented by the addition of autolysed yeast to the deficient diet; liver extract was not apparently tried as a therapeutic agent in this experiment. The marrow at autopsy showed a scarcity of mature forms suggesting a condition of maturation arrest. These observations raise many interesting problems. It is known for instance that the quantity of phenols present in the intestine is increased above normal in nephritis and pernicious anæmia. Is there a toxic element in these anæmias? Does the occurrence of some such toxic substance in the body, associated with a dietary deficiency, explain individual idiosyncrasy to certain drugs? Agranulocytosis may for instance suddenly develop in someone who has apparently taken amidopyrine for years without any ill effects. We have learnt to think in terms of "conditioned deficiencies": it seems we must now consider the possibility of "conditioned toxicities."

[1] Rhoads, C. P., *Proc. Soc. exp. Biol., N.Y.* 1937, **36**, 652.
[2] Rhoads, C. P., and Miller, D. K., *Ibid*, p. 654.

SARCOMA OF THE UTERUS

Knowledge concerning the prognosis of rare but remediable diseases is often scanty, and it is scantiest when diagnosis presents any difficulty. An example of a comparative rarity of this kind is sarcoma of the uterus, which amounts to 2–3 per cent. of all malignant uterine neoplasms. Since 1920 a number of American authors in a series of excellent papers have attempted to find facts to guide both diagnosis and prognosis in this disease. The report of yet another investigation from the United States, by Novak of Baltimore and Anderson of Glasgow,[1] coincides by chance with a contribution on the same subject from the Middlesex Hospital by Handley and Howkins, published in our two last issues.[2] Every inquirer now aims at studying both clinical and pathological aspects of large numbers of cases including their after-histories for at least five years. The two papers referred to are based respectively on 59 and 40 cases. Though they bring to light nothing new, they are striking in that they contain independent statements of similar views and confirm in a general way the work of nearly all their predecessors. There appears to be no outstanding divergence of opinion, and there is substantial agreement on a number of points. Thus it may now be accepted that (as we have said) non-epithelial neoplasms form 2–3 per cent. of all malignant uterine growths; that they are commonest at about fifty years of age; that the symptoms are the same as those of carcinoma and are in no respect characteristic; and that diagnosis depends on microscopic examination unless the sarcomatous change has occurred in a myoma, in which case it can sometimes be diagnosed on macroscopic signs alone. The diagnostic criteria follow general principles, but in addition the presence and number of mitotic figures are of special importance. Evans [3] originally worked out a method for counting and estimating mitoses per cubic millimetre of tissue, and though most of his successors have not followed his technique in detail, they have used the idea of making some kind of estimation. All agree that the degree of mitotic activity corresponds in an impressive way with the malignancy of a tumour. This means that all have found that when the innocence or malignancy of a tumour is in question owing to absence of atypical growth, the most useful single point is the observation of mitotic figures. The finding of mitoses justifies a diagnosis of sarcoma. This does not of course mean that absence of mitoses can be interpreted as excluding malignancy when all other criteria are present.

Much less agreement has been reached about prognosis. The anatomical position of sarcoma of the uterus and the fact that it metastasises by the blood stream will probably obstruct progress in this direction for many years to come. Kimbrough,[4] who set out to determine the factors that influence end-results, estimated that half the operable and about a third of all cases were alive after five years. He also stated that prognosis in sarcomatous transformation of myomata is three times more favourable

[1] Novak, E., and Anderson, D. F., *Amer. J. Obstet. Gynec.* November, 1937, p. 740.
[2] Handley, R. S., and Howkins, M. D., *Lancet*, Nov. 20th, 1937, p. 1180, and Nov. 27th, p. 1246.
[3] Evans, N., *Surg. Gynec. Obstet.* 1920, **30**, 225.
[4] Kimbrough, R. A., Jun., *Trans. Amer. gynec. Soc.* 1934, **59**, 39.

than in all primary sarcomas of uterine wall, endometrium, and cervix, and that young women, as compared with those who have passed the menopause, have three times the likelihood of surviving operation for a five-year period. Novak and Anderson [1] on the other hand give a five-year salvage of 15 out of 50 cases, while Handley and Howkins [2] record even less favourable figures, for of 25 cases operated on five or more years ago only 4 are alive and well. Since recurrence can be long delayed, the final prognosis may be even less favourable than this figure suggests.

IMPROVING WINTER MILK

THE method of conserving clover and grass crops for winter fodder, known as the A.I.V., consists in storing the freshly cut crop in silos and spraying it with a mixture of sulphuric and hydrochloric acids in equal parts of such a strength that the reaction of the whole is brought to about *p*H 4. At this stage all enzyme action and butyric and other noxious fermentations are inhibited, and any loss of nitrogen in the form of ammonia is prevented, while the carotene content is fully preserved. After about two days the material is ready for use but can be preserved almost indefinitely without loss of nutritive value. By employing a mixture of the two acids the cattle are found to take the product readily and without disturbance of digestive functions, whereas they soon tire of a product made from hydrochloric acid alone. The very extensive use of this process in Finland and many other countries has established the fact that, owing to the preservation of the carotene, the vitamin-A content of the milk is maintained at the summer level and much expenditure on concentrates can be saved. The process owes its origin to Prof. A. I. Virtanen of the Technical University of Helsinki, Finland, who is the director of the laboratory of the Foundation for Chemical Research and also of the laboratory of the Coöperative Butter Export Association "Valio." Last month, at the invitation of the Board of Studies in Biochemistry of the University of London, Prof. Virtanen delivered three lectures at the London School of Hygiene and Tropical Medicine. The first lecture dealt with his interesting discovery that the root nodules of leguminous plants infected with the symbiotic nodule bacteria excrete amino-acids into the soil; this observation furnishes an explanation of the mechanism by which leguminous plants enrich the soil. The second lecture described pot experiments illustrating the beneficial effects upon various kinds of cereals or potatoes of growing peas or other leguminous plants in association with them. The third lecture was devoted to the description of a systematic and carefully controlled survey, on a large scale, of the total vitamin intake of a number of selected families of various social scales residing in widely distributed localities in Finland. The conclusion drawn from the results of his survey, which involved the assay of vitamins A, C, and D in the dietaries of the various communities examined, was that in the winter and early spring the food of certain grades of the population of Finland is deficient in these vitamins, and Prof. Virtanen believes that by a much more extensive use of the A.I.V. process the vitamin content of winter milk could be so raised as to make up for this deficiency, provided the persons concerned increased their consumption of milk. Since milk is cheap in Finland and the adult population of that country already are accustomed to drinking it in considerable quantity an increase in the consumption, sufficient to attain the desired level of vitamin intake, should not present great difficulties. The impression left on those who heard these lectures was that an extensive impartial trial of the A.I.V. process might with advantage be undertaken in this country with a view to testing the applicability of the process to our own milk-supply.

ANATOMICAL ILLUSTRATIONS

MUCH difference of opinion exists among teachers, and also among pupils, on the value of pictorial and diagrammatic aids in the study of anatomy. This does not concern the illustration of a formal lecture by such aids, where their value is generally admitted, but rather their use by the student reading up his subject. Present-day text-books are well illustrated, and students seem to find the figures of considerable value. Special issues like Baillière's Synthetic Anatomy (Cheesman) [1] aim at helping the worker in some particular way—in this case by enabling him to make an effort to build up the region he is studying. Inquiries among students seem to show that they appreciate these devices. Dr. Cheesman's transparencies have been completed, and now include the eye and central nervous system. Such a method, if it proves useful, can have few drawbacks so long as the student does not fall into the common mistake of thinking of the representations as constituting "anatomy," which of course is the understanding of the structure of the body. A collection of figures of a different sort has appeared recently as a complete issue of Dr. Jamieson's diagrams,[2] some of which were welcomed on their appearance earlier in the year. These figures, which are all very good, are copies of the diagrams used by Dr. Jamieson in his lectures, and he has done well in making them available to every student in the kingdom. The two sets of illustrations are quite different in scope and purpose and will appeal to different types of student. Both of these works have been produced with care and finish and should give satisfaction.

PREVENTION OF PULMONARY EMBOLISM

IT has been estimated that every year in the United States of America nearly 34,000 people die from pulmonary embolism, which would mean that of the 130 million people now living there over 3 million may expect to succumb to this accident. Such figures convey something of the importance of pulmonary embolism as a danger to modern surgery, and show how necessary it is that all possible measures should be taken to eliminate it. Barnes of Rochester, Minn., considers that much can be done to diminish the incidence if the common danger signs are fully recognised.[3] It is, he says, the obese patients over 40 years of age, and especially those with cardiac lesions, that are the most likely victims, and it is the serious abdominal operation that is most often responsible. Although there is still much to be learnt about the ætiology of pulmonary embolism it may be taken for granted that in most cases the emboli arise from thrombosis in the femoral, iliac, or pelvic veins, and that the important factor is slowing of

[1] Baillière's Synthetic Anatomy. By J. E. Cheesman. London: Baillière, Tindall and Cox. (Complete in Fourteen Parts.) 3*s*. per part.

[2] Illustrations of Regional Anatomy. Second edition. By E. B. Jamieson, M.D., Senior Demonstrator and Lecturer, Anatomy Department, University of Edinburgh. Edinburgh: E. and S. Livingstone. 1937. Section I, Central Nervous System, pp. 48, 7*s*.; Section II, Head and Neck, pp. 63, 12*s*. 6*d*.; Section III, Abdomen, pp. 37, 5*s*. 6*d*.; Section IV, Pelvis, pp. 33, 3*s*. 6*d*.; Section V, Thorax, pp. 30, 4*s*.

[3] Barnes, A. R., *J. Amer. med. Ass.* Oct. 23rd, 1937, p. 1347.

the venous circulation. Precautions should therefore be directed towards preserving an efficient circulation in the lower extremities, and Barnes describes the measures taken in one of the surgical services of the Mayo Clinic. There it has been the custom for the past year to place every patient in the Trendelenburg position for the first 24 hours after operation, taking care to keep the legs warm and applying frequent massage, and also carbon dioxide inhalations, during the first 48 hours. Passive and active movements have been insisted on until the patient is out of bed, and in a series of 750 consecutive operations, most of which were laparotomies, no pulmonary embolism has occurred since this programme was adopted. Barnes also points out that fatal embolism is commonly preceded by one or two milder attacks, which should serve to give warning of the impending danger. These attacks do not always give rise to the cardinal signs of cyanosis and dyspnœa, but may be manifest in shock, vomiting, and collapse, and he advises that when such warning has been given a syringe containing half a grain of papaverine hydrochloride for intravenous administration should be kept ready in the patient's room. He also urges that special care should be exercised over the early activities of the patient during convalescence. He believes that if precautions were more widely taken there would be a good prospect of lowering the surgical mortality from pulmonary embolism.

OCULAR EFFECTS OF ASPIRIN IDIOSYNCRASY

ASPIRIN quite often causes skin eruptions and other toxic troubles in sensitive people, but ocular disturbances after taking medicinal doses of this drug are comparatively rare. In one of Uchida's two cases [1] they accompanied a skin eruption, but in the other they were the only sign of idiosyncrasy. His first patient was a man of 49 who had twice had similar symptoms after taking aspirin. In spite of this he took 10 grains one morning when he had a cold. This was at 5 o'clock, and an hour later he complained of sudden pricking pains in his eyes with dimness of vision, lacrymation, and photophobia. At 10 A.M. both conjunctivæ were found to be hyperæmic. His corneæ showed a few small vesicles and some diffuse superficial opacities and were almost anæsthetic. His optic discs were slightly congested and his visual acuity, after correcting his hypermetropia, was 0·5 in one eye and 0·4 in the other. He had patches of erythema on the dorsum of his right hand and foot, a purple discoloration of the fourth finger of his right hand, and some œdema of his prepuce. His urine contained a trace of albumin and he had an eosinophilia of 8 per cent. With local treatment and alkalis internally his eye condition cleared up rapidly and had disappeared completely at the end of a fortnight, his visual acuity having then returned to 1·0. The skin eruption left a pigmentation which persisted for several months. The second patient was a man of 26 who took 7½ grains of aspirin, also because he had a cold; three hours later his eyelids were so swollen that he could not fully open his eyes. He had previously shown idiosyncrasy to aspirin and to certain foods, as had his parents and his sister. When examined five hours after taking the aspirin his eyelids were cyanotic and much swollen, his conjunctivæ were congested, and there was some lacrymation and photophobia. His corneæ and fundi were normal, though his visual acuity after correcting his myopia was only 0·2 in the left eye and 0·7 in the right. His urine showed a trace of albumin and contained aspirin for forty hours after he had taken it—about twice the normal time. He recovered completely in three days. It seems probable that the presence of an infection and possibly a transitory renal disturbance contributed in both of these patients to the severity of their reaction.

[1] Uchida, Y., *Folia ophthal. orient.* 1935, **2**, 38; Collected Papers, Faculty of Medicine, Osaka University, Japan. 1937.

LUNG PUNCTURE FOR TUBERCULOSIS

SOME years ago Prof. Robertson Lavalle of Buenos Aires introduced a method of treating certain types of tuberculous osteo-arthritis by the insertion of a bone-graft into a tunnel bored through the diaphysis and across the epiphysis to reach the lesion. Theoretically the graft acted as an osseous drain and it was noted that within a short time—sometimes not much more than a week—there was a substantial improvement in the patient's general condition, this being followed as a rule by complete healing of the bony lesion. Later it was thought that so long as the tunnel reached the tuberculous focus the bone-graft was not essential, but with further experience this opinion has been revised. The type of lesion for which the operation was performed is described by Prof. Robertson Lavalle as the "nucleus of post-allergic infection" and is regarded by him as the result of a reinfection. In our present issue he gives an account of a modification of this technique for the same type of lesion in pulmonary tuberculosis; for practical purposes it may be termed lung puncture. The detection of this lesion—a small sharply defined area less than the size of a threepenny bit with a star-shaped margin or areola of pin points—requires a first-class stereoscopic radiogram; and this is also needed, we should imagine, for control of the operation. The technique, as its author points out, is still in the experimental stage. It is an old fact of clinical experience that an inflammatory focus—e.g., an unresolved pneumonia, which has been accidentally penetrated by the exploring needle in searching for an empyema—will occasionally begin to absorb rapidly afterwards. But this has always been regarded as a more or less fortuitous result, whereas Prof. Robertson Lavalle's operation is deliberately planned. Obviously it would not be undertaken lightly, and in any trial of the method in this country it is desirable, we think, that the work on tuberculosis of bone should be repeated before any attempt is made to test the merits of lung puncture.

CEREBRAL DAMAGE AFTER ANÆSTHESIA

NITROUS oxide is so generally relied on as being the least harmful of all inhalation anæsthetics that any attack on its innocence requires both scrutiny and consideration. A case record by Ford, Walsh, and Jarvis [1] contains an attack of this kind; for though they head it "A case of extensive injury to the cerebral cortex following nitrous oxide-ether anæsthesia," it is the nitrous oxide, not the ether, that they blame for the disastrous happenings. We think, however, that careful examination of the report will enable readers to differ from their conclusion and to acquit the anæsthetic on this charge. The patient was a healthy young man operated on for bilateral hernia. The operation was begun under spinal anæsthesia, but this did not last long enough and nitrous oxide and ether were then given, with a quarter of a grain of morphia. Shortly after the

[1] Ford, F. R., Walsh, F. B., and Jarvis, J. A., *Bull. Johns Hopk. Hosp.* October, 1937, p. 246.

inhalation had started the patient stopped breathing. "Artificial respiration was carried on for about ten minutes" after which spontaneous respiration was re-established. After returning to the ward the patient remained in a state of coma for 36 hours. During this time there were several convulsive seizures. He seemed fully conscious after three days but subsequently he suffered from various mental symptoms, from visual defects, from aphasia, and from apathy. At the end of six months the aphasia had gone, but there was still impaired vision and ataxia. A detailed account is given of the neurological symptoms and their probable explanation, but as we have said it does not appear proven that their origin can justly be attributed to nitrous oxide: it seems more likely to lie in the period of "about ten minutes" during which respiration was being re-established. If through failure of respiration the cortical cells are deprived of due nourishment for a long enough time they will undergo degenerative changes which, if the patient survives, will give rise to symptoms comparable to those described, and this will happen whatever anæsthetic has been employed. About a year ago [2] we referred to four other cases in which cerebral damage was put down to the action of nitrous oxide gas, and in these also it seemed probable that the anæsthetic was not responsible for the symptoms shown in life or for the post-mortem lesions.

HEROES AND RABBITS

THE employees of every industrial concern include two classes which lie at the opposite extremes of a table of sick absences. At one end are those whose criterion of fitness to work is their ability to walk, while at the other appear the poor things who take every opportunity of staying away. Neither are ideal employees. Apart from the risk they themselves run of converting a trivial and transitory into a serious and prolonged illness by the lack of reasonable care, the heroes are the instigators par excellence of epidemics among their fellow workers. On the other hand the rabbits are an expensive and troublesome luxury in any firm. In both the cause of their attitude towards absenting themselves often lies at home. Lack of sympathy in his family, pressing financial needs, and an over-estimate of his own importance spur on the hero, whilst the opposite—over-fussiness of wife or mother, a reputation for weakness of the chest, plentiful home comforts, good sick-pay, and a natural irresponsibility—leads straight to rabbithood. The medical certificate is no defence for the employer against either type of workman. One never reports sick until he is compelled, and it is a brave doctor who will order the other to get up and go to work when he has a slight infection and says he feels very ill. Health education and propaganda may impress upon the hero that discretion is the better part of valour and that his enthusiasm is misplaced. The rabbit must be dealt with by other methods. In a paper read last week to a section of the Royal Society of Medicine Dr. H. H. Bashford described the treatment for "gutlessness" successfully employed by the Post Office. Much depends, said the chief medical officer, upon the atmosphere in the psychological sense of the office or department, and this is influenced largely by the man or woman in charge of it. A fretful and unsympathetic supervisor or one who is himself introspective and given to self-pity can create an infection which permeates through those under his charge, whilst a healthy, kindly, and competent head can radiate a precisely opposite influence. Apart from this a quiet talk to the chronic absentee may be effective, with attention to any neglected septic teeth or tonsils, but if these measures fail the only thing is to accept the sick absences at their face value and let it be known that retirement is under consideration. In 40 successive cases who, for relatively trivial causes, had incurred a total of 6194 days sick absence in four years, kindly advice and mention of retirement led to a fall in the next six months to a mere 54 days absence, a drop in their six-month average from 19 days per head to 1·3 days. The problem is, however, not an easy one. The modern tendency is to encourage everyone to take care and perhaps overmuch care of their health; "go to bed at the first sign of illness," we say, and it is unfair to blame or threaten with the loss of their job those who take our words literally.

[2] *Lancet*, 1937, **1**, 158.

DURATION OF THE MENSTRUAL CYCLE

CLOSELY following the report on physical and emotional periodicity in women reviewed in our issue of Oct. 30th (p. 1058) comes an analysis of the menstrual histories of 852 women belonging to the professional classes.[1] The data were obtained by questionnaire: every woman agreed to post, immediately after the beginning of each menstruation, a record card giving the date and time of the onset. The commonest average intervals between periods proved to be 26, 27, and 28 days; only about 2 per cent. of the women had average intervals of less than 24 days, and only 3 per cent. of 37 days or more. The average interval for all the cases (29 days) was longer than the average interval of the largest classes (26, 27, and 28 days). It is noteworthy that not one of the 852 women proved to be really "regular"; in the most regular subject the intervals varied between 25 days 19 hours, and 28 days 13 hours. In several women the difference in length between the shortest and longest cycles was over 30 days, while the arithmetic mean deviation was greater than ± 4 in 13 per cent. Most of the very variable women had high average intervals. The data did not reveal any significant difference in variability between spinsters and married women. It also seemed that no value can be attached to a description of a woman as being this or that "menstrual type," for she is likely to fall into different categories from year to year. Further analysis showed that the length of each interval was independent of the length of its predecessor, and that there were no large or consistent differences due to occupation within the limited professional group studied. On the other hand it was apparent that the average interval shortens with increasing age, and that there is no significant seasonal change in the length of the cycle; if there are seasonal changes in some individuals, there are opposite and equal changes in others. Other points of interest that emerge from this study are that there is a slight but real tendency for menstruation to start in the latter part of the week (Thursday to Saturday) and that there is no correlation between lunar and menstrual cycles. The investigators discuss their findings in relation to the view, as expounded by Knaus, that women are fertile only during a limited phase in the middle of the cycle, and, assuming the correctness of Knaus's general conclusion, they think that the safe-period method of contraception should be of great value in some cases and of some value in most

[1] Gunn, D. L., Jenkin, P. M., and Gunn, A. L., *J. Obstet. Gynæc.* October, 1937, p. 839.

cases. In considering the report the possibility arises that the women studied do not constitute a true random sample of the population. A menstrual interval, by definition, is the period intervening between two phases of uterine bleeding. A long period, however, is regarded as a period of amenorrhœa, while periods in rapid succession are usually taken to indicate excessive bleeding. Women who experience either of these conditions would be far more likely to consult gynæcological clinics than to take part in a questionnaire on the menstrual cycle, and their exclusion from such a questionnaire must tend to restrict the data obtained to the middle of the range. It is not unlikely that some such circumstance is responsible for the fact that Mr. Gunn and his colleagues find rather less variability in the length of the menstrual cycle than other recent inquirers have recorded.

Dr. Zuckerman has summarised the information available about the menstrual cycle in monkeys and apes,[2] and his conclusion is that, in monkey as in man, approximately four weeks is the most frequently recurring interval between successive phases of uterine bleeding. Observations of the external "sexual skin" changes seen in some species of monkey show that the follicular phase of the cycle is generally longer and more variable than the luteal phase. This finding may be related to the well-established view that the luteal phase in the human menstrual cycle is usually less variable than the pre-ovulation phase.

BRAIN AND MIND

THE Burden Mental Research Trust was founded in 1933 when a period of five years' work was contemplated. We now learn [3] from the chairman of the trust, Dr. R. J. A. Berry, who is also director of medical services at Stoke Park Colony, that the continuation of these activities as a part of the regular work of the colony is under consideration. An important line of investigation has been the complete ascertainment of the mental capacities of children in a cross-section of the normal school population. In the city of Bath, 3400 children were tested and information is being obtained about the distribution of intelligence within the families. Groups of children of very low and very high intelligence are being singled out for intensive study. A line of investigation, which it is hoped to pursue, will be the analysis of the physical, mental, and social conditions of the past and present patients of the colony. The results of this inquiry are expected to afford a useful comparison with those obtained from the normal school population.

A different kind of research is also being carried out under the trust. This is the macroscopic and microscopic examination of the brains of normal and defective persons. Up to the present time a collection has been made of the brains of 80 normals and 123 defectives. The staff is engaged on the examination of the size and weight of the brain and on histological studies of the cortex. The investigators confidently expect that much light will be thrown on the basis and genesis of mental deficiency by their work. It is open, however, to us to hope that the results of the inquiries into the relation between cerebral structure and mental ability will not be interpreted from a too rigid epiphenomenalistic viewpoint. The correlation between brain size and intelligence is a loose one: cretins, for example, have heads of normal size. Those who have had the opportunity of reading Prof. Berry's discussions on the relation of head size to intelligence will know that he was one of the first to point out that head size could be used in the diagnosis of mental defects. The work under the Burden trust should make it possible for the advantages and limitations of such a method to be exactly determined.

[2] Zuckerman, S., *Proc. Zool. Soc. Lond.* ser. A, 1937, p. 315.
[3] *Bristol med.-chir. J.* Autumn, 1937, p. 201.

VACCINATION IN SOVIET RUSSIA

Prof. Syssine, director of the State Institute of Public Health in Moscow, records a striking decline of small-pox in Soviet Russia as the result of vaccination.[1] It was not until 1918, after the Revolution, that a law was passed making vaccination compulsory. The effect of this measure was that small-pox which had hitherto been very prevalent, especially in rural districts and in remote parts of the country, at once showed a rapid fall in incidence. The number of cases, which in 1915 had been 126,518, sank to 18,514 in 1925, 10,345 in 1928, and 6406 in 1929. In the subsequent quinquennium there was a slight increase in the incidence of the disease, attributed to the unsystematic manner in which vaccination had been carried out in certain areas, but more vigorous measures were then adopted and the number of cases fell from 17,327 in 1934 to 3156 in 1935 and 385 in 1936, while in the first quarter of 1937 not a single case was notified. The amount of effort required to attain this result is illustrated by the following figures: in 1935 there were 47,461,305 vaccinations, of which 8,900,209 were primary and the remainder revaccinations, and in 1936 there were 39,869,718 vaccinations, of which 8,426,647 were primary and 31,443,071 revaccinations. The number of institutes in Soviet Russia concerned in the preparation of vaccine lymph was 33 in 1937. The vaccinations were performed free of charge by the medical staff of out-patient departments, school doctors, and a special staff of vaccinators numbering about 7000.

[1] Syssine, A., *Bull. Off. int. Hyg. publ.* 1937, **29**, 1884.

THE EARL OF ATHLONE will open the Bernhard Baron laboratories of the Royal College of Surgeons of England on Wednesday next, Dec. 8th, at 2.45 P.M.

WE regret to announce the death on Nov. 30th of Dr. DANIEL FREDERICK RAMBAUT, medical superintendent since 1913 of St. Andrew's Hospital, Northampton, and a pioneer in the rational treatment of mental disease.

Dr. R. C. ROBERTSON, director of the division of pathology and bacteriology at the Lester Institute of Medical Research, Shanghai, has been appointed as the epidemic commissioner to the English-speaking anti-epidemic unit which is to be sent out to China by the League of Nations Health Organisation to help the Chinese authorities to combat epidemics. Dr. Robertson will be visiting England early in December in order to complete the team, which will require the services of three medical members besides the commissioner.

THE December issue of the *Practitioner* contains a number of articles on the sulphanilamide group of drugs, with an editorial introduction. It also contains a Questionnaire on Puerperal Sepsis, asking for particulars of cases of puerperal sepsis (septicæmia, peritonitis, and pelvic cellulitis) encountered in practice in the past ten years, together with special notes on any that were treated with sulphanilamide compounds. Copies of the questionnaire may be had by non-subscribers on application to the *Practitioner* office at 5, Bentinck-street, London, W.1. It is hoped that the pooled experience of practitioners may be helpful in assessing the value of the new remedies in the streptococcal infections of childbirth.

SPECIAL ARTICLES

STRENGTH TESTS

OBSERVATIONS ON THE EFFECTS OF POSTURE ON STRENGTH OF PULL

BY T. BEDFORD, D.Sc., Ph.D.

AND

C. G. WARNER, B.Sc.

INVESTIGATORS TO THE INDUSTRIAL HEALTH RESEARCH BOARD

(*From the Department of Industrial Physiology, London School of Hygiene and Tropical Medicine*)

AN index of general muscular strength which is much used in studies of physique is the maximum lumbar pull. In performing the test the subject pulls on a spring-balance dynamometer, the handle of which is adjustable in height.

Vernon (1924) showed that the strength of pull in such a test is much influenced by the height of the handle. With his subjects there was a well-defined optimum height above or below which the strength of pull diminished considerably. The measurement of lumbar pull is one of the tests which are being used by several observers for the assessment of the state of nutrition. In such studies it is desirable that the maximum pull should be measured, particularly if the results obtained with different groups of subjects and by different observers are to be compared, and to this end the handle should be adjusted to a standard height in relation to the height of the subject.

In recent investigations such adjustment has been made, but different standards have been adopted by different workers. Cathcart and his colleagues (1927, 1935) adjusted the handle to the height of the middle finger-tip, while Hill, Magee, and Major (1937) after preliminary trials adopted the level of the upper border of the patella. There is a distinct difference between these two heights, and from Vernon's results it is evident that if the maximum pull can be made at one of them it cannot be made at the other. (It may be noted that in the observations of Hill, Magee, and Major the pull on a dynamometer was used as the standard exercise in a study of pulse-rates. It was not necessary to record the maximum pull of which each subject was capable.) Further evidence on the need for stringent care with regard to the height of the handle of the dynamometer was obtained by us in a series of observations described below.

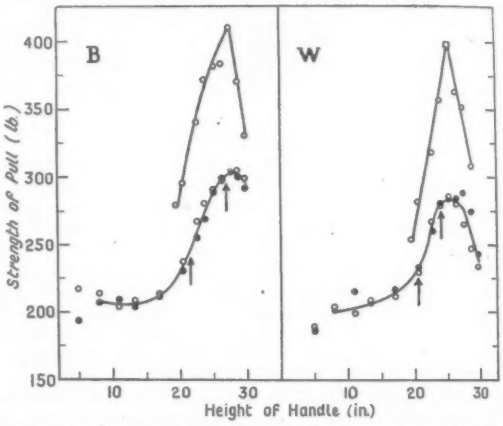
Hill, Magee, and Major mention that in their experiments the subjects kept the knees straight but not rigid. Sargent (1897), describing strength tests at the Hemenway Gymnasium at Harvard, referred to two dynamometer tests. One of these was the measurement of lumbar pull, the legs being kept straight at the knees. The other was a leg-lift, the body being held erect with the chest thrown forward, and the knees bent at an angle to suit the physical peculiarities of the lifter. In making the leg-lift the handle-bar was placed upon the thighs and held there, firmly grasped by the hands with the fingers beneath the bar. In the specific case quoted by Sargent the subject's lumbar pull was 100 kg., while with the leg-lift he pulled 160 kg. In our observations we examined the effects on the strength of pull of some variations in posture.

METHOD

The spring-balance dynamometer described by Vernon (1924) was used. The balance lies on the platform on which the subject stands, and is screwed to it. A stout chain is attached to the handle and this is connected to the balance by a length of bicycle chain which passes over a pulley.

Observations were made on two subjects. The lumbar pull was measured (*a*) with the heels together, and (*b*) with heels 12 in. apart, the knees being kept quite straight. The dynamometer handle was short (9½ in. long), and the ordinary overhand grip was employed. In other observations the heels were kept together, the knees bent, and the trunk erect with the shoulders well back. Since the handle-bar was short it could be kept clear of the thighs when the knees were bent.

In all cases the arms remained straight; no attempt was made to flex the elbows. The pull was always a vertical one, care being taken that the subject did not lean backwards. Observations were made with the handle at various heights from the platform, so as to cover the position at which the pull was at a maximum. With the knees bent and trunk erect no pulls were made with the handle less than 19½ in. high, because at less heights the trunk could not be kept erect without raising the heels.



Strength of pull in relation to height of dynamometer handle. The lower curves denote lumbar pull; the black spots represent observations with heels together and the circles with heels 12 in. apart. The upper curves show the strength of pull with knees bent and trunk erect. (Subjects B and W.)

Preliminary trials of these pulls were made for three days, until the subjects were practised in pulling and their hands had become accustomed to the strain, and the results reported below were obtained directly afterwards.

RESULTS

Observations were made on each of three successive days. At each position of the handle two trials were made with each type of pull on each day of experiment. The points plotted in the Figure each therefore represent the mean of six pulls.

It is clear from the diagram that the lumbar pull was practically the same whether the heels were closely together or 12 in. apart: one curve fits the observation points for both stances. B's lumbar pull was at a maximum when the handle was about 28 in. from the platform, and W's maximum was with the

handle about 25 in. high. At lower heights the strength of pull diminished rapidly.

B's height to the middle finger-tip is 27 in., and W's 24 in. The heights to the upper border of the patella are 21½ in. and 20½ in. respectively. These heights are marked by arrows below the curves of lumbar pull. In both subjects the maximum pull was achieved with the handle approximately at the height of the middle finger-tip—the height adopted by Cathcart and his colleagues.

The upper curves in the accompanying Figure show the strength of pull with knees bent and trunk erect. For this method of pulling the most favourable height was the same as that for the lumbar pull, but whereas with the lumbar pull a departure of an inch or so from the optimum height made little difference, with the knees bent and trunk erect a change of 1½ in. on either side of the best height caused a considerable diminution in the strength of pull (about 7 to 10 per cent.). With the trunk erect and knees bent a much more powerful maximum pull can be exerted than with the back bent and knees straight. In the two subjects the difference amounted to 105 and 110 pounds, or 26 to 28 per cent. of the maximum lumbar pull.

Some observations were made of the strength of pull when, instead of maintaining one of the positions described, the subject bent both his knees and his back. It was found difficult to repeat such a posture with accuracy, as with the handle at a given height the knees would be bent more and the trunk less on one occasion than on another. Consequently the pulls made were very variable.

It is clear from our data that in dynamometer tests such as have been described the handle of the instrument should be adjusted to a standard height, and that if the maximum pull is to be measured that height should be the level of the subject's middle finger-tips. Any appreciable deviation from that height is likely to cause a considerable reduction in the pull recorded. When, as is generally the case, the lumbar pull is being measured care should be taken that the knees are kept quite straight.

SUMMARY

1. In an increasing number of studies of physique the maximum lumbar pull, as measured on a spring-balance dynamometer, is being used as an index of general muscular strength.

2. The pull which can be exerted is greatly influenced by the height of the dynamometer handle, the pull being at a maximum when the handle is at the height of the subject's middle finger-tip. This is the height to which the handle should be adjusted.

3. In measuring the lumbar pull care should be taken that the knees are kept quite straight.

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GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV. 23RD–26TH, 1937

Penal Cases Referred by the Dental Board

THE following dental cases were heard, and in each case the name of the dentist was deleted from the Register in accordance with the recommendation of the Dental Board after its inquiry: *Robert Whitton Goldie*, registered as of 6, East-road, Elgin, "Dentists Act, 1921," who had been convicted in the Sheriff Court of Aberdeen, Kincardine and Banff of lewd and libidinous behaviour towards three little girls; *Mihran Haroutune Chirinian*, registered as of 57, Fasset-road, Kingston-on-Thames, "Dentists Act, 1921," who had been convicted at the Central Criminal Court of conspiring to procure miscarriage; *John Donaldson*, registered as of Orwell Cottage, Dunoon, Argyllshire, L.D.S.R.F.P.S. Glasg., 1928, who had been convicted in Scottish courts of a number of offences connected with drunkenness and assault; *Albert Stanworth*, registered as of 26, High-street, Towyn, Merioneth, "Dentists Act, 1921," and *David Minton*, registered as of High-street, Blaina, Mon., "Dentists Act, 1921," both charged with false certification and improperly obtaining or attempting to obtain money from approved societies for work not done.

The sixth dental case was that of *Leon Shaw*, registered as of Midland Bank Chambers, 221, Edgware-road, London, W.2, "Dentists Act, 1921." This case was heard in camera, Mr. Shaw being present and defended by Mr. R. F. Levy, K.C., and Mr. John Stephenson, counsel, instructed by Mr. P. V. Stallon, solicitor. The Council did not see fit to order the erasure of Mr. Shaw's name.

Charges against Medical Practitioners

The Council then considered seven charges of drunkenness and its consequences adjourned from previous sessions, and five new charges of drunkenness, without directing the erasure of any name from the Register.

ERASURES FOLLOWING CONVICTIONS

The Case of Samuel Grahame Connor, registered as of 75, Bedford Court Mansions, London, W.C.1, M.B., C.M. 1889, U. Edin. Dr. Connor had been summoned to appear on the charge of having been convicted at the Central Criminal Court in June, 1937, of using an instrument with intent to procure the miscarriage of seven women, for which crime he had been sentenced to twelve months' imprisonment in the second division. He did not appear, and the Council's solicitor said that he was ill and in hospital. His name was erased.

The Case of Patrick Joseph O'Shaughnessy, registered as of Ballitore House, Ballitore, co. Kildare, M.B., B.Ch. 1926, N.U. Irel. Dr. O'Shaughnessy was summoned because of his conviction twice for drunkenness in the autumn of 1936, and at Liverpool City Quarter Sessions on July 29th, 1937, for indecently assaulting a married woman, for which offence he was sentenced to three months' imprisonment in the second division. He appeared, accompanied by Mr. Oswald Hempson, who made a statement in mitigation and produced testimonials. The Council directed the erasure of respondent's name.

A CHARGE OF ADULTERY

The Case of Frederick Henry Nixey, registered as of 2, Ospringe-road, London, N.W.5, M.B., Ch.B. 1915, U. Edin., who had been summoned to appear before the Council on the following charge.

That being a registered medical practitioner (1) you committed adultery with Mrs. Phyllis May Salzer in or about August, 1934, and on numerous occasions thereafter until August, 1936; (2) you stood in professional relationship from February, 1934, until August, 1936, with the said Phyllis May Salzer, and with her husband Henry Conrad Salzer from March, 1934, until May, 1935. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mr. Henry Conrad Salzer, who was accompanied by Mr. Charles A. Davis, solicitor.

Dr. Nixey was not present, nor was he represented.

Mr. Davis read a statement from Dr. Nixey denying the charges and stating that the relationship had been merely that of landlord and tenant. He said that in February, 1934, his clients had taken rooms over respondent's surgery and had both become his patients, Mr. Salzer going on his panel. Dr. Nixey had first approached Mrs. Salzer one day when he was massaging her in the surgery, suggesting that she was wasted on her husband. Later, he had left the surgery but had continued the relationship with her, sending for her to his rooms and taking her out in his car. The husband had eventually learned of the adultery; Mrs. Salzer and the doctor had both at first denied and later admitted it. Letters had been addressed to Miss Cooke at the address of a friend, Mrs. Cook, and had been passed on to Mrs. Salzer; one of these letters was available. It contained expressions which indicated attachment.

Mr. James Charles Gilbert, clerk to the London Insurance Committee, testified that Mr. Salzer had been on Dr. Nixey's panel from June 30th, 1934, until September, 1935, when Dr. Nixey had resigned from the list.

Mrs. Phyllis May Salzer related the history of her acquaintance with respondent. She had consulted him professionally for rheumatism at the end of February, 1934, and had seen him almost daily. In June, 1934, he had suggested intercourse; at the time he had been massaging her neck and back. She had repulsed him, and had said she would not tell her husband because she did not want to have to move out of the flat. Ultimately intercourse had taken place in the surgery and had been frequently repeated, and continued at the various places where respondent had subsequently lived. Dr. Nixey had tried to poison her mind against her husband. The last date of intercourse and of professional attendance had been in August, 1936. She produced an undated prescription for indigestion. She had not, she said, been attended by any other doctor during the material times.

Mr. Salzer confirmed the story told by his counsel and his wife. Dr. Nixey had, he said, treated him for itching of the legs and produced two prescriptions. He and the doctor had gone dog-racing together almost every night, and had maintained friendship up to August, 1936. Anonymous letters had informed him of the adultery with his wife. He had not seen respondent after this until a fortnight ago, when he had visited him. The police had been sent for. Witness had told him to keep away from his wife and respondent had not made any reply. Witness had not paid any fees to the doctor; he had never had a bill. The doctor had attended him as a friend at least a year after leaving his practice. The last attendance had been for the shock produced by a half-confession. He knew nothing of any panel records.

Dr. Nixey's name was erased.

UNPROVEN CHARGE OF DRUNKENNESS

Alexander Ronald Black, registered as of 105, London-road, Neath, Glam., M.B., Ch.B. 1922, U. Glasg., was charged as follows:

That being a registered medical practitioner, and whilst acting as locum tenens for Mr. Manik Ghosh, M.B., a registered medical practitioner, you on Jan. 11th and 12th, 1937, were so far under the influence of drink that you were unfit to attend or treat patients; and that this constituted infamous conduct in a professional respect.

Mr. Black appeared, accompanied by Mr. O. Hempson on behalf of the Medical and Dental Defence Union of Scotland, members of which withdrew and took no part in the hearing. The complainant, Mr. Ghosh, was represented by Mr. R. W. Skinner. He said in evidence that he had employed Mr. Black as a locum tenent in January, 1937, in order that he might go to a nursing-home for operation. While there he had received a telephonic complaint from the clerk to the insurance committee that Mr. Black was unfit to attend the insured patients, and had authorised the clerk to make other arrangements. Mr. Black had left the next day and had not communicated with him. He admitted that he had made no attempt to ask Mr. Black for an explanation, but had lodged his complaint on the word of his servants and two patients. On cross-examination, he said that he would prefer their estimate of the doctor's condition to that of a medical man or mental expert. Two of his maids and two patients testified that Mr. Black had been in a "very peculiar" condition; one of the maids, aged seventeen, and a woman patient said the doctor had been drunk. Mr. Hempson in defence said that Mr. Black had, shortly before the material time, seriously fractured his jaw and had been suffering from extreme physical and nervous exhaustion.

Dr. John Stanley, police surgeon, and Dr. R. Snowie testified that they had examined the respondent on the evening of which complaint had been made and had found him overwrought and overworked, but with no signs whatever of drink. Two other doctors sent statutory declarations to the same effect. The Council found that the charge had not been proved.

The Pharmacopœia

Prof. DAVID CAMPBELL, in introducing the report of the Pharmacopœia Committee, said that the number of copies of the British Pharmacopœia, 1932, sold during the last six months had been 1596, and that of the 1936 Addendum 3743 copies had been sold. The totals sold since publication had been 44,872 and 9300 respectively. The work of the B.P. Commission, he reported, was proceeding actively. Much detailed investigation upon individual substances had been carried out and the results had made it possible for the Commission to revise and approve provisionally 322 monographs. These would be further reviewed before they were included in the Pharmacopœia. The Commission proposed to invite criticisms and suggestions for improvement in the more important of the proposed changes from medical practitioners, pharmacists, and others interested. The list of proposed improvements and additions which had been sent to medical authorities at home and overseas had elicited many valuable criticisms and suggestions. When all available comments had been collected the Commission proposed to define the scope of the next Pharmacopœia. Close coöperation with the committee of revision

of the U.S. Pharmacopœia continued. The changes effected by the first supplement to the eleventh U.S.P. were being carefully considered by the Commission.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH UNIVERSITY CHANCELLORSHIP

Edinburgh University is perhaps best known outside Edinburgh for its medical school. It is therefore not surprising that many members of the medical faculty thought it inappropriate that Lord Lothian, who is well known to be a christian scientist and an antivivisectionist, should be elected chancellor. Lord Lothian was nominated by a committee appointed by the General Council of University, but at a meeting of the General Council last week Lord Tweedsmuir gained a large majority in the vote of members present. Dr. Edwin Bramwell supported his nomination and said that "we feel so strongly that Lord Tweedsmuir is an ideal candidate for the post that we are prepared to wait the two or three years until he retires from his present position. Sheriff Neil A. MacLean, K.C., proposed Lord Lothian and said that it was true that Lord Lothian was a christian scientist, but that he had said that he could with a clear conscience, in spite of his views, cap a young graduate with the degree of bachelor of medicine. The voting for the chancellorship will now be carried out by post.

URINARY REACTIONS IN DISEASE

In health the urinary reaction, acid or neutral, is determined by the proportion of acid and basic elements present, which are derived from the food. Prof. D. M. Lyon, delivering in Edinburgh the sixth Honyman Gillespie lecture, spoke on the reaction in disease and on treatment. Diet has an important effect on the urine and abnormal products are excreted if metabolism is upset. Urinary reaction varies during the process of digestion, the well-known "alkaline tide" accompanying the outpouring of hydrochloric acid in the stomach. Highly acid urine is excreted in acidosis resulting from severe starvation, diabetes or liver damage, and in pregnancy. Alkalosis is very uncommon but is seen in hysterical hyperpnœa, and rarely in massive alkaline therapy. Prof. Lyon pointed out that the estimation of the acidity or alkalinity of the urine by titration, used until recently, is fallacious, since it does not distinguish strong acids from weak. Accurate estimation is now performed by dye indicators, which give the *p*H of the urine.

When food is burnt in the body, as in a calorimeter, "ash" remains which is passed in the urine. The acidity or alkalinity of the ash determines the reaction of the urine. Oils and sugars give a neutral ash: animal and vegetable foods produce respectively acid and alkaline ash. An alkaline-ash diet has been used experimentally in the treatment of nephritis and has been shown to cause a definite improvement. A similar diet has proved useful in the treatment of hyperpiesia by relieving the symptoms and Sanson claims that it lowers the pressure.

After discussing the value of a ketogenic diet in the treatment of epilepsy, Prof. Lyon said that in the urine of patients with ketosis, ammoniacal decomposition is delayed; ketogenic diets were therefore tried in urinary infections. This treatment, however, is unpleasant, and the ketone bodies themselves cannot be given by the mouth. He then referred to mandelic acid treatment. It is generally given as sodium mandelate which is converted into the acid in a strongly acid urine, the *p*H of which must be between 5·0 and 5·5. The older urinary acidifiers were found to be incapable of producing such a degree of acidity, but ammonium chloride is effective. This treatment clears up infection with greater certainty than the older methods, but recurrence unfortunately is just as liable to take place.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A RADIOTHERAPEUTIC INSTITUTE FOR IRELAND

THE Minister for Local Government and Public Health of the Irish Free State has accepted in principle the recommendation of the Hospitals Commission to establish a radiotherapeutic institute for the treatment of malignant disease. It is proposed that the institute should be in or near Dublin, and that the training of a suitable personnel should be undertaken. It will be under the control of a national representative body to be known as the Cancer Council. In the first instance a provisional cancer council will be formed for the purpose of submitting proposals to the Minister for the provision, staffing, equipment, and administration of a radiotherapeutic institute having regard to existing facilities, and in general to report on such aspects of the problem as the council thinks fit. It is intended that the provisional council should consist of fifteen persons—namely, five representatives of the voluntary hospitals to be nominated by the Associated Hospitals (Sweepstakes) Committee, representatives from the following institutions—University of Dublin, the University Colleges of Dublin, Cork, and Galway, the Royal Colleges of Physicians and of Surgeons, and the Royal Dublin Society, and four persons, including the chairman, to be nominated by the Minister.

For some years past the Irish Radium Committee, which worked in association with the Royal Dublin Society, has been pressing on the Minister and on the Hospitals Commission some such development as is now foreshadowed. From 1920 to the present the control of radium for purposes of research and treatment in Ireland has been in the hands of the Irish Radium Committee, a joint committee of the Royal Dublin Society and of the (now extinct) Irish Public Health Council. The original stock of radium was the property of the Royal Dublin Society to which, at the time the committee was formed, was added a loan from the Medical Research Council. The committee has added to this stock from time to time by purchase and by gift. Most radiotherapeutic work in Ireland has been done with radon rather than with radium itself. It may be worth recalling that the hollow needle method of applying radon, now widely used, was first developed in Dublin by the late Prof. John Joly and the late Mr. Walter Stevenson.

TYPHOID IN A MENTAL HOSPITAL

A serious outbreak of typhoid fever has occurred in the Co. Donegal Mental Hospital at Letterkenny. The outbreak has now lasted for some three weeks. Seventy-one persons have been infected, including three members of the staff, and there have been four

deaths. The infection is said to have been traced to a patient who was a carrier, but the water-supply has also come under suspicion. Steps are being taken to improve and increase the water-supply. There are some seven hundred patients in the hospital.

VIENNA

(FROM OUR OWN CORRESPONDENT)

THE "NORMAL CASE" IN PANEL PRACTICE

MEDICAL work in the health insurance societies has greatly increased everywhere in the last few years, but in Austria there are not yet any accurate and differentiated statistics about individual diseases. To be valuable there should be figures for the incidence of morbidity not causing hospitalisation or a stay in bed at home. Reliable statistics are already available for industrial accidents among the members of the Krankenkassen. The new system of sickness insurance in force in Austria has now prompted the workers' krankenkasse to issue a new regulation, allowing of the statistical control of the medical work. Each case reported will be classified under one of 28 groups, according to the disease. This will be very useful for calculating the final fees payable to the medical attendants on the panel list, for at present only 60 per cent. of the monthly bill presented by the doctor to the krankenkasse is paid at once; the rest is held over until the end of the year, when the income and expenditure of the kasse are known. The doctor will now be asked to state the duration of each disease and how many calls or visits it requires, so that an average can be worked out for every condition. The kasse, with the coöperation of representatives of the profession, will then be in a position to fix a certain sum payable at the end of the year for the treatment of a given disease under average conditions. Excessive medication or attendance exceeding the "normal" will have to be explained and may be paid for separately, if justified.

Meanwhile, privately conducted statistics show that on the average a medical man can conveniently look after the medical needs of about 1328 members of his district. He is needed by these about 1900 times in the year, with nearly 5000 calls and visits. Among the doctors themselves 9 per cent. were incapacitated from work for periods of over three days. Of course these figures are open to error, but since the future financial status of a large proportion of the younger practitioners will depend on the satisfactory working of the new system, it is easily understood that all information on these subjects is interesting.

DIFFICULTIES IN THE DRUG LAWS

In reply to complaints about the extensive abuse of narcotic drugs, the Government some time ago issued an order regulating their sale. Among the many mentioned were morphia, cocaine, and heroin, though codeine was not included. But the wording of the order was not clear and unmistakable enough. It often happened that medical men came into court accused of prescribing narcotics for other purposes than "to cure an otherwise incurable condition in a sick person," as the text of the original draft put it. In 1930 the Ministry of Justice and in 1936 the Supreme Court decided that the prescription of these drugs serves a curative purpose not only when a diseased condition is to be combated, but also when "the use of such a drug prevents a detriment to health or allays the pains caused by an illness." The Supreme Court's decision was responsible for the dismissal of several actions against doctors, but the existing law was still troublesome to practitioners. Now all the Austrian medical bodies have addressed a petition to the Ministry of Health asking for a strict and unequivocal new Act in which the profession would have more ample scope for prescribing these remedies. The wording suggested that would satisfy all medical requirements was: "The practitioner is justified in prescribing narcotic drugs not only for 'curative' but also for 'therapeutic' purposes."

DEATH OF PROF. GAERTNER

One of the most original and eminent physicians of this city, Prof. Gustav Gaertner, has died here at the ripe age of 83. Born in Bohemia, he soon came to Vienna and took up his studies at the university. After graduation he accepted an assistantship at the newly created institute for experimental pathology under the great Stricker. His duties there gave him an extensive knowledge of all the problems of experimental physiology. Soon he published a series of discoveries and innovations and apparatus, which included his tonometer for measuring the blood pressure, the electric sphygmomanometer, rheostatic instruments, and the two-cell bath. Later on he turned his attention to problems of metabolism, and his method of weight reduction for obesity is still used. He introduced hypertonic saline for cholera and oxygen in circulatory disease, superfatted milk, and many other useful therapeutic procedures. On his retirement he built up an extensive practice. He combined the gifts of a bold and keen experimenter with those of a good physician and a splendid teacher

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

A STATE MEDICAL SERVICE IN TASMANIA

THE Government of Tasmania, in accordance with a plan for the improvement of public health in that State, is appointing ten doctors to the staff of the Department of Public Health. The aim of this plan is to provide all people, irrespective of the locality in which they live or their financial position, with the best medical attention and hospital accommodation where necessary, with adequate supervision from a public health point of view. The location of each of the ten medical officers will be decided after a survey by the Department of Public Health of the medical services available in the country districts. Their duties will consist mainly in attending the sick and injured in their districts. The facilities of the existing "bush nursing" centres will be placed at the disposal of the officers and extended as soon as possible. Preventive medicine will be a feature of the organisation. The new officers will take over the duties of medical officers of health, and the public health measures regarding sanitation, dairying, and milk-supplies will be enforced by them. Strict attention will be given to the isolation and treatment of infectious diseases and the control of quarantine. Lectures on preventive medicine will be given to appropriate organisations, such as parents' and country women's associations. Arrangements for study leave will be included in the terms of appointment. The Government wishes to concentrate the major curative resources at the base hospitals already established.

Smaller hospitals will be used mainly as clearing and casualty stations, and for accommodating minor cases. Two bacteriological and pathological laboratories are already working, and smaller ones will be established in other centres, also a central dispensary with depôts in each district will be established.

POST-GRADUATE TEACHING IN NEW ZEALAND

There are no permanent arrangements for post-graduate study in New Zealand and it is the custom for practitioners to go abroad for this purpose. As New Zealand is an isolated country there is a movement to create machinery whereby advantage could be taken of the infrequent visits of distinguished teachers. Consideration is being given to the development of a large hospital as a post-graduate school, independent of the existing undergraduate medical school at the University of Otago at Dunedin. There is some opposition to this proposal on the ground that Australian experience has shown the value of combining undergraduate and post-graduate education especially in the early stages of the latter.

"COMPANY PHARMACY" IN AUSTRALIA

The proposed introduction of a branch of Boots the chemists raised a storm of protest from the pharmacists of New Zealand and the Australian States against the "trustification" of pharmacy. Although two of Boots' shops are already operating in New Zealand the Government has prohibited any extension of the company's activities for twelve months. The idea is to give New Zealand pharmacists time to adjust their practices in order to compete with "company" pharmacy. An amendment of the Pharmacy Act by the Labour Government of Queensland prevents any extension of "company pharmacy" in that State. Any existing company is prohibited from opening new branches or changing its name. A commission of inquiry on this subject is sitting in New South Wales. Tasmania now prohibits "company pharmacy," and it is believed that no amendment of the Pharmacy Act in that State would be accepted. The "chain-store" system of trading in pharmacy is opposed by the Premier of South Australia. The law in Western Australia is to be altered by the Government next session so as to exclude any extension of company pharmacy. It is evident that the pharmacists of Australia and New Zealand possess the backing of Parliament in their opposition. In order to maintain this, and to guarantee every satisfaction to the public, they are endeavouring to still further improve the standard of their service.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

CONTROL OF DRUGS

UP to Nov. 11th 73 deaths have been notified as due to Elixir of Sulfanilamide, and they are now definitely attributed to the diethylene glycol it contains. This is the greatest disaster in therapeutics since the Lübeck accident with B C G vaccine. No matter at whose door public opinion may lay the blame, real responsibility lies with the public which continues to tolerate inadequate statutes regulating the manufacture, advertising, and sale of proprietary remedies. The existing statutes, incorporated in the Food and Drugs Act of 1906, are probably administered as competently as is legally possible. Before it was passed in 1906 this Bill, as a means of effective control, was shot to pieces by vested lobbying interests. Its authority is divided between State and federal governments—one of the many remnants of State autonomy controlling national public interests. Its standards for drugs are the standards of the United States Pharmacopœia and of the National Formulary of the Pharmaceutical Association—i.e., are the standards of two independent, autonomous, and private bodies. With the existing law in this condition there is no question of fixing criminal responsibility for the recent deaths on any person or persons.

Originally introduced and discussed in committee before the Senate, there are now two Bills before the Lower House of Congress for further discussion, which seek to remedy the existing laws. The Copeland Bill aims at consolidating authority in the U.S. Department of Agriculture, of which the present Food and Drug Administration is a sub-department. The Wheeler-Lea Bill would give to the Federal Trade Commission control of the advertising, and to the Food and Drug Administration the prevention of mislabelling and adulteration of commercial pharmaceuticals. Both Bills in their present forms are severely criticised by the American Medical Association's department of legal medicine and legislation. The Wheeler-Lea Bill is undesirable because it divides authority. The Copeland Bill is hopelessly inadequate in setting up legal standards for pharmaceuticals. With the recent deaths it is hoped that public opinion will force legislators to produce effective legislation. "Under the present Food and Drugs Act," says the *J.A.M.A.*, "or even under any of the Food and Drugs Bills now before Congress, there seems to be no provision which would prevent a repetition of this tragedy."

There is an interesting sidelight in the publicity which the general toxicity of the glycols has received. Certain brands of cigarettes have enlisted wide medical and public approbation on the strength of "containing no glycerin or other harmful products." Instead of glycerin ethylene glycol has been the hygroscopic agent most widely employed. This so affected the sales of the American glycerin manufacturers that they have financed during the past year a nation-wide experiment carried out for them by ear, nose, and throat specialists. It was determined that glycerin was not harmful to the throat. It seems likely that the manufacturers have gone to needless lengths, for the public will now prefer to smoke glycol-free cigarettes.

RADIO-ACTIVITY: INSULIN: PNEUMONIA PROPHYLAXIS

At the meeting of the National Academy of Sciences at Rochester University, New York, the Comstock prize was given to Ernest Orlando Lawrence for the development of the magnetic resonance accelerator known as the cyclotron. This instrument, developed at Berkeley in California in the last seven years, is extending the late Lord Rutherford's investigations into atomic structure. Elements bombarded by the high-energy neutrons which this machine is capable of producing form radio-active isotopes, with definite life-cycles, and almost any element may be made radio-active thus. Radio-activity is mensurable, and it may prove possible to follow the path in the body of atoms "tagged" by rendering them radio-active. This may provide a possible check method of observation in the work now in progress on the distribution of atoms in the body by the use of tagged atoms of heavy hydrogen, heavy nitrogen, &c., developed by H. C. Urey and his associates at Columbia University.

With the results obtained by J. R. Murlin, L. Young, and W. A. Phillips the search for oral insulin

progresses a step further. On the theory that the absorption of insulin is prevented by the layer of mucin and of fat on the intestinal villi, they find that a combination of insulin with alkali and hexyl resorcinol is absorbable. The action in dogs whose pancreas has been removed is irregular but definite. The investigators specifically state that nothing is known of the reaction of humans to this combination, nor do they estimate its future practicability.

A national experiment on a large scale is now in progress. During the month of October 300,000 boys of the Civilian Conservation Corps received prophylactic doses of the antipneumococcal vaccine (types I and II) developed by Dr. Lloyd Felton of the Johns Hopkins Medical School. The annual incidence of pneumonia in the C.C.C. is about 600 cases, of which 50 or so are fatal. This year 300 cases, with 10–20 deaths, are expected.

PANEL AND CONTRACT PRACTICE

PUBLIC MEDICAL SERVICES

Dr. A. McCARTHY (Birmingham) took the chair on Nov. 24th at a conference of nearly 100 representatives of public medical services held at B.M.A. House. The B.M.A., he said, were aware of 58 services in operation—Dorset, Leeds, Llandudno, Redcar, and West Norfolk had started during the year—while services were in process of formation at Bradford, Berkshire, Bristol, South Shields, and Walsall, and being considered by East Somerset, Wiltshire, Stoke-on-Trent, and Plymouth. In response to efforts to improve the rates of remuneration, in seven services the subscription rate had been raised, in four no action had been taken for the moment owing to economic conditions. The P.M.S. subcommittee had secured approval for a model scheme providing a medical attendance for persons of moderate income above the health insurance limits on the basis that—

(1) the service will be under the complete control of its members; (2) membership is open to any registered medical practitioner in the area; (3) there is free choice of doctor by patient and of patient by doctor; (4) there is provision for the patients of non-coöperating practitioners.

London, it was stated, had extended its scheme so as to provide for persons with a total income up to £550 a year.

The subcommittee had laid down the principle that the subscription rates should ensure that after deduction of expenses of administration and collection the practitioners would receive for each person at risk a sum not less than that paid under the N.H.I. Acts (including the dispensing fee). Should the conditions in any area not allow of such a rate being paid the approval of the B.M.A. council was to be obtained for a lower rate. At present the rates were below these in many areas.

On the motion of Dr. H. W. POOLER (Chesterfield), chairman of the P.M.S. subcommittee, it was resolved that those services which have so far not been approved by the B.M.A. be urged to seek such approval.

COÖRDINATION

Dr. R. W. DURAND (secretary of the London and Counties Medical Protection Society) said that coördination was necessary for effective management. Some day no doubt the State would provide a medical service which would render public medical services, as we know them, unnecessary. The postponement of that day did not make our responsibility the less or diminish a need which was admitted by anyone to whom the scheme was explained. As a London representative had aptly put it last year "There is an increasing public which cannot afford to pay a doctor in the ordinary way." But there was a wider aspect of public medical service. The Prime Minister had said "The cardinal rule of health is—Ask your doctor, and ask him in time." But would the ordinary person consult his doctor in time (which means will he anticipate illness) if there was the barrier of payment per item of service? Public medical services could and did provide for those members of the community who could not afford to pay a doctor in the ordinary way. We must see that the services afforded to them were comprehensive, covering all the ordinary general practitioner services, and that they were made known widely. In return there should be a fair remuneration for the family doctor. Dr. Durand concluded: "It is obvious that some day the State will realise its responsibilities. When the State does take over it is most important that the profession should have a big say in the control of the administration of medical services. By coördinating now, and having a smooth working machine actually in operation when the State is ready, we shall have gone far to justify our claim that we are capable of efficient administration. If services are sporadic and entirely individualistic, as they now are, I fear we may be accused of being very poor business men."

Dr. R. S. V. MARSHALL (Wolverhampton) moved:—

"That this conference considers that public medical services cannot satisfactorily be coördinated and extended unless statistical information computed on a uniform basis is available, and accordingly requests the P.M.S. subcommittee to prepare notes for the guidance of secretaries in their completion of an annual return."

Dr. S. WAND (Birmingham) thought the time had come when the smaller services should consider amalgamation; in London, on the other hand, the unit might well be divided into four.—Dr. R. O. EAVES (Ipswich) would like officers of the P.M.S. to meet and thrash out a scheme for a common method of accounts, reduced costs, uniformity of stationery, in following up subscribers, in methods of collection, &c. They should form an association similar to that of health insurance officials.

Dr. Wand also obtained consent to a motion recommending each P.M.S. to approach the M.O.H. of its area offering its help in the establishment of schemes whereby the family doctor might take his full share in the public health work of the nation.

PUBLICITY

Dr. E. A. GREGG (London) moved that the B.M.A. be urged to spend part of its publicity fund on the national advertising of public medical services. He thought it necessary as they were approaching a new order of things professionally.—Dr. G. C. ANDERSON remarked that Dr. Gregg, as chairman of the Insurance Acts Committee, would now be one of the three persons responsible for spending the money on publicity. Public medical services however existed as yet in only a few areas and publicity was a national matter. Care would have to be taken in districts where there was no public medical service. Steps had already been taken to get this conference noticed and posters had been prepared, but national advertising in the press would be very expensive.

The next conference will probably be held in May, 1938.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A CIVIL SERVANT

I

". . . Lazy Whitehallian fellows sinking into the intellectual torpor that an assured—even if modest—income begets." Thus my immediate predecessor in these columns.

"Well, well . . . and tell Saunders to send me the duelling pistols immediately," might I write with Mr. Otto Thake. True, my salaried surgical friend doesn't himself agree with this point of view but it certainly is widely held among our profession. "*Black* coffee, after *lunch*?" said my host. "Doesn't it interfere with your afternoon sleep?"

The "rond-de-cuir," the "desk-wallah," these men feel, can only be carrying on his dreary task because he is unfit to do anything else, because he cannot face the fierce competition of practice, where Men are Men and a minute means sixty seconds; and to have abandoned the stethoscope for the pen seems to them somehow to have betrayed Hippocrates and given Galen a kick in the pants. In the same way the Government servant, the administrator, may disparage at times the clinician, may talk of "drifting" into general practice and, while admitting that the G.P. is the backbone of the profession may suggest that the backbone only stiffens at the chink of money.

* * *

Having divided the years since qualification almost equally between general practice and official medicine I can understand and share both points of view, nor am I greatly worried by their divergence. It is, after all, only the natural rivalry of two branches of the same profession. Listen to the infantryman on the gunner, the English on the Americans, or a county family on its neighbours; yet if anything threatens their respective mutual interests, all is (temporarily) forgotten. This cleavage in our ranks was inevitable and necessary owing to the growth of specialisation and I see no more sense in suggesting, for example, that general practitioners should take part in the public health services merely to overcome it, than in suggesting that all physicians should do a little surgery in order to prevent an occasional rude remark about a surgeon by a physician. It has often been suggested that general practitioners have thrown away their chance of playing a prominent part in the public health services by their refusal to take their clinics seriously and to consider preventive as important as curative medicine. This may be partly true but it is also true that preventive medicine had become a specialty of which their training as medical students had left them lamentably ignorant; and in any case if they did throw their cake away it has been handed back to them on a silver salver, since, to quote Sir Arthur Newsholme, "The disputed territory in the main had never been occupied. It was opened up by the public authorities and the total amount of work coming to the medical profession (including private practitioners) has been greatly increased by this continuing exploration."

* * *

But even if the general practitioner is not likely to play a large part in the actual public health services that does not mean that he has not an all-important place in preventive medicine in its wider sense. "Tout comprendre, c'est tout pardonner" and the practitioner should at least understand enough of what the health services are doing to realise that he and they have the same object in view, though working by different methods; they are allies not competitors. This should be the mainspring of the ordinary student's course in public health—damp, drains, and Imhoff tanks should come after—a long way after. In this matter most of our London schools are behind the provinces and the length of time allotted to the public health course is in most cases considerably less in London than elsewhere. First must come mutual understanding and respect for the aims and difficulties of the other. The student should be made to realise that maternal mortality can present just as fascinating a problem as a death in childbirth; that tracking the source of an outbreak of enteric may call for as great powers of detection as discovering the cause of a P.U.O.; and that to some men the successful selection, in writing a report, of the one word which exactly fits the case may be as satisfactory as the compounding of an elegant mixture. Why did plague die out suddenly in England? Why did typhus never appear on the Western Front, and why has there been no epidemic of it in Spain? What are the chances of yellow fever reaching India or tularæmia England? What is the best and cheapest way of providing isolation hospital accommodation in a county? What should be the proper spheres of the International Public Health Office in Paris and the Health Organisation of the League of Nations at Geneva? When the general practitioner realises that it is problems of this sort that have attracted some of us into public health and not a mere inability to overcome at the bedside a congenital attraction between the foot and the chamber-pot, there will be as much gained as when the public health officer remembers that the persistent failure of the G.P. to keep records may be because he prefers to neglect his notes rather than his patients; that his truculence over the telephone may be due to an all-night confinement or to indigestion from years of bolted meals; and, above all, that what Mrs. Snooks said her own doctor said about the clinic doctor's proposal to send Alfie to a sanatorium is not necessarily true.

* * *

Our mutual relations, to resume the military metaphor, should be those of infantrymen and gunners, not military police to potential deserters, and fortunately the bad old days are over when a retiring M.O.H. could say with pride, "Well, I think I've done my duty. I've quarrelled with nearly every G.P. in the county!"

After all, every private practitioner has long taken a share in the medical services and preventive work of the State and the local authorities. Sixteen thousand "panel" practitioners receive annually six million pounds from National Health Insurance funds. There are still more than three times as many part-time medical officers of health as whole-time appointments; police surgeon, public vaccinator, certifying medical officer under the Factory Acts, medical

officer to the post officer, naval agent—these public posts are held in the vast majority of cases by general practitioners; and every practitioner has the statutory duties of notification and certification laid upon him. The private practitioner is the scout of the public health services; until he has notified the enemy's presence the services cannot go into action. Unless notification is honest, skilled, and prompt, the M.O.H. will be fighting blindfold. Again, it is the private practitioner who can play the greatest part in health education, and even in his clinical work he and the preventive medical officer have the same object, though they operate from different directions. Starting with the sick person, the practitioner tries to get earlier and earlier diagnosis and treatment and to push back the point of diagnosis until he can say, "You are just beginning to get so-and-so. Do thus-and-thus and no serious harm will come." Starting with a community, the M.O.H. tries to look forward and say, "Unless such-and-such is done, so-and-so will occur."

We are all bound to each other and to the chariot of the State—some loosely, some more firmly. Instead of quarrelling as to our share in the work, should we not all help to pull it along?

CORRESPONDENCE

CONTACT LENSES

To the Editor of THE LANCET

SIR,—The question of contact lenses has aroused considerable interest since the presentation of a paper by Dr. Josef Dallos of Budapest on the subject at the Oxford Ophthalmological Congress. That correcting lenses worn in contact with the cornea offer in theory the best means of correction of certain errors of refraction has long been recognised, but the practical difficulties of making a glass which is optically perfect and at the same time wearable for long periods have been usually looked on as insuperable.

As long ago as 1887 Müller succeeded in demonstrating that it was certainly possible to make such a glass, but the technical difficulties remained great. With the introduction of ground contact lenses fresh interest in the subject was aroused and a certain number of patients benefited. The disadvantages of the original ground contact lenses may be summed up by saying that since they all have a scleral portion ground to a spherical curve they are unsuitable for use in cases of scleral astigmatism (which is commoner than was formerly thought) and that as they exist only in a relatively small range of sizes it is not always or indeed often possible to find one that can be tolerated.

Various attempts to overcome these difficulties have been made in recent years and the most successful as well as the most scientific certainty appears to be that advocated and perfected by Dr. Dallos. In his method of fitting a mould or cast of the anterior segment of the eye is first made and the glass is then formed accurately to this. The final fitting (which includes removal of pressure on the cornea and limbus region where close contact cannot be borne) is done by grinding away the glass by hand with frequent controlling on the patient, until a perfectly even and light pressure is obtained. Such glasses can be worn for long periods without discomfort or harm to the eye and are of inestimable benefit in cases of conical cornea, irregular corneal astigmatism, aphakia, and high errors of refraction generally. They give a retinal image of normal size and an increased visual acuity over that obtainable by spectacle lenses in such cases, as well as a full field of vision. Their use is greatest in cases in which full visual acuity cannot be obtained with spectacles, but they are also indicated for occupational reasons—e.g., for stage and film work, and in patients exposed to rain and steam where glasses would be likely to fog.

Such contact lenses manufactured by the method and under the supervision of Dr. Dallos are now obtainable in this country, and a centre is in existence in London to which patients can be referred for the processes of fitting. Courses of instruction in the technique are also to be held and a section dealing with hospital cases has been inaugurated. The results obtained so far seem to justify a wider recognition of the value of Dr. Dallos's work in this direction.

We are, Sir, yours faithfully,

A. RUGG-GUNN,
F. A. WILLIAMSON-NOBLE,
IDA MANN.

London, Dec. 1st.

SUBARACHNOID HÆMORRHAGE SIMULATING ACUTE ABDOMEN

To the Editor of THE LANCET

SIR,—The case of subarachnoid hæmorrhage reported in your issue of Nov. 20th presents many interesting features. Dr. Thurston takes the view that the origin of the hæmorrhage is more likely to have been an aneurysm of the circle of Willis than an intraspinal hæmorrhage and suggests "that the abdominal pain was due to irritation of the lower dorsal nerve-roots by the deposit of fibrin." I appreciate the grounds upon which he bases this view—namely, the fact that his patient had at various times since 1930 suffered from attacks such as are often seen in persons with aneurysms at the base of the brain. In spite of this previous history, however, it seems to me that such details as are given of this particular attack point rather to an intraspinal than an intracranial origin. Thus on Sept. 26th, 1937, "she noticed a 'stitch-like' pain in her left side" and it is added "There was no headache, vomiting, or bowel disturbance." During the next two days "she carried out her usual household duties." On the fourth day (Sept. 29th) "At midday, she was seized by a sharp abdominal pain whilst shopping," and it was not until eight hours after this second attack of abdominal pain that cerebral symptoms of any kind made their appearance. Thus, so far as the record goes, if one substitutes "side-ache" for "back-ache" this attack seems to conform in every particular with the definition of intraspinal hæmorrhage as given by Dr. Thurston: "intraspinal hæmorrhage begins with severe backache and shows neck stiffness and headache as later developments." There is no reference in the record to any symptoms during the few days immediately preceding the occurrence of pain, such as would indicate the onset of the intracranial leak.

The onset of spontaneous subarachnoid hæmorrhage, even in the milder cases, is usually so striking and so characteristic—namely, sudden severe occipital pain, &c.—that it is difficult to imagine a leak from a basal aneurysm of sufficient extent to lead to a deposit of fibrin halfway down the cord without producing any cranial symptoms whatever until

four days after the pain in the spinal region had begun. In this case the question of recumbency which Dr. Thurston mentions as a contributory factor hardly arises seeing that the patient was going about as usual during the attack. Further, if recumbency plays any part, a similar sequence of events would probably be more common than it is in cases of spontaneous subarachnoid hæmorrhage, seeing that the majority of patients go to bed at the onset of the attack and remain in the recumbent position for several days. Actually, however, severe somatic pain in cases of leaking aneurysm is rare. I have only seen it once, when it came on within twenty-four hours of very sudden and intense head symptoms.

There is one further point connected with Dr. Thurston's case which seems worth bearing in mind. The illness only began a few weeks ago (Sept. 26th) and although it is stated that there has been steady improvement, it is perhaps rather early to assume that the trouble is all over. These symptoms may possibly be only the precursors of some local organic lesion which will declare itself later. I mention this possibility because I have seen a case in which this was the unfortunate course of events.

In November, 1932, I was asked to see a case of what appeared to be a typical example of the "lumbosciatic" form of spontaneous subarachnoid hæmorrhage. The patient (40 years of age) had been seen by various medical men, including the late James Collier. Everything pointed to a simple subarachnoid hæmorrhage with lumbosciatic symptoms. Further he improved steadily after lumbar puncture and at the end of December, 1932, was convalescent. A few months later, however, symptoms of a malignant growth of the spine showed themselves and rapidly proved fatal. The spinal meningeal hæmorrhage was evidently the first symptom of this.

As regards the site of a subarachnoid hæmorrhage, there seems no particular reason why it should not occur at places other than the circle of Willis. Increasing knowledge of the arterial defects which give rise to aneurysm shows that they are distributed more widely than was at first suspected. Wiley Forbus [1] in his observations on congenital aneurysms and defects in the tunica media, whilst dealing primarily with those in the circle of Willis, showed that similar defects could be demonstrated sometimes in the coronary arteries, sometimes in the mesenteric, and sometimes in both, as well as at the base of the brain. More recently Nevin and Williams [2] have recorded two cases of associated intracranial and abdominal hæmorrhage. In both cases there were congenital cerebral aneurysms, and in both there were developmental defects in the tunica media of the mesenteric arteries. I am not aware that any investigations have as yet been made as to the occurrence of similar defects in spinal vessels, but such a thing does not seem unreasonable.

In conclusion, I may say that as regards the case which I recorded [3] in 1932, to which Dr. Thurston kindly refers in his paper, the man remains perfectly well and leads an active business life. It is now more than seven years since the attack and there has been no recurrence of symptoms of any kind. Personally I am of opinion that in this case the hæmorrhage was primarily in the lower spinal region. The data given by Dr. Thurston seem to me to point also to a local spinal origin in his case.

I am, Sir, yours faithfully,

Sheffield, Nov. 26th. ARTHUR J. HALL.

[1] Forbus, W., *Johns Hopk. Hosp. Bull.* 1930, **47**, 239.
[2] Nevin, S., and Williams, D., *Lancet*, Oct. 23rd, 1937, p. 955.
[3] Hall, A. J., *Ibid*, 1932, **1**, 1135.

ASSESSMENT OF PSYCHIATRIC TREATMENT

To the Editor of THE LANCET

SIR,—I fear that my response to Dr. Mary Luff's invitation to join in a coöperative inquiry into psychiatric treatment, in which I raised possible difficulties over differences in terminology, has made her class me as a most regrettable specimen of the psychiatric backwoodsman.

It is clear that Dr. Luff would find serious discussion difficult, if not impossible, with any psychiatrist who was unable to accept the "clear conception" of narcissism; and that she believes that this conception of narcissism is generally considered to be a valuable one by all reasonably up-to-date workers in psychological medicine, even if, like herself, they are not Freudian psycho-analysts. I think she is mistaken, and I hope that this rather exclusive attitude is not general in the Tavistock Clinic. Thus Dr. Luff would find herself debarred from contact with many distinguished psychiatrists whom I have had the pleasure and privilege of meeting, or with whom I have worked. Many, like Prof. Adolf Meyer, were not followers of Freud; and although it is reasonable to suppose that they could, at least up to a point, "follow" his theories, they were unable to find them very useful. I have found the beliefs prevalent that the conception of narcissism was a Freudian conception, dependent upon other Freudian conceptions; that it only possessed a legitimate meaning and value as an integral part of psycho-analytic theory; and that, like all technical terms, it should only be used in its technical—in this case Freudian—sense, or not at all. If we have different concepts, we should employ different terms; for confusion might arise if the technical term narcissism was made to vary from its original meaning; and this, in so far as a departure is made from Freudian views, becomes inevitable.

It is not as if the conception of narcissism has gained a general recognition as being a useful one in psychopathology comparable to that which has been gained by the conception of projection. And if Dr. Luff doubts this, I can only refer her back to the textbook of Henderson and Gillespie, to which she has referred me for information. She will there find (these authorities are her own suggestion and choice) that the only indexed allusions to narcissism are contained (1) in one sentence in the brief exposition of Freud's "special theory of libido of which the barest outline follows"; and (2) in the discussion of the Freudian conception of paranoia. It would therefore seem that these distinguished psychiatrists also regard narcissism as a specifically Freudian conception, and one moreover only worth a passing mention in a "barest outline." It is also difficult to believe that they find the conception necessary or even useful in their psychiatric thought; for if they did, then surely they would have demonstrated, or at least mentioned, the value of applying it in their illustrative case-histories, which they do not do.

But it is high time that I turned to the two questions I am asked: (1) how do I treat neuroses apart from psychotherapy, and (2) how do I distinguish patients suitable for such methods *from* patients suitable for psychotherapy? It is, of course, impossible to answer such questions in a few sentences. I can only say here that as regards (1) the invaluable activities of the psychiatric social worker at once come to mind, and (2) seems possibly to raise false alternatives; for it is so very seldom a question of "either—or."

So in my turn may I issue an invitation, and ask Dr. Luff to continue our discussion in private over a glass of sherry? We shall start with the toast—"to the cause of psychiatric treatment"; with the help of my (dry) sherry I shall hope to persuade her that I try both to understand and to treat my patients; and I do not believe that the fur will fly when later we come to consider how some advance in psychiatric treatment may best be achieved.

I am, Sir, yours faithfully,

Wimpole-street, W., Nov. 29th. DESMOND CURRAN.

CARCINOMA OF THE STOMACH

To the Editor of THE LANCET

SIR,—Dr. D. Jennings's reference to British medicine and "rackets" in his letter to THE LANCET of Nov. 27th is perhaps best ignored. But I should like to comment on the paragraph beginning with "Let us place on record, now, before it is too late, this fact," in which he accepts Gutzeit's observations through a gastroscope as facts and Prof. Stewart's microsconical examinations of fresh specimens removed at operation as fiction. As he apparently has little faith in any work of British or American origin, I would refer him to the investigations of such distinguished German authorities as Korbsch and Henning, both gastroscopists with experience at least as great as that of Gutzeit, Konjetzny, Orator, Hauser, Boas, and von Bergmann, all of whom agree with Prof. Stewart's and my views on the origin of gastric carcinoma. So far as I know, Gutzeit is the only German physician or pathologist of standing who does not believe, as we do, that carcinoma is a sequel of malignant degeneration of a chronically inflamed or ulcerated gastric mucosa.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Nov. 29th.

GASTROMEGALY DUE TO ARTERIO-MESENTERIC OBSTRUCTION OF THE DUODENUM

To the Editor of THE LANCET

SIR,—In his interesting case of chronic duodenal ileus (Nov. 20th, p. 1190) in a boy of two years old, Dr. Seton Campbell was doubtless satisfied that treatment by means of gastro-jejunostomy was desirable; but it is a pity that, with his three months' experience of a single case, he should hint that this operation is likely to be the correct treatment for this condition in childhood. He writes that "the alternative is that these people must live with the possibility of obstruction hanging, like the sword of Damocles, over their heads." If this is a picture of the perils of acute duodenal ileus with paralytic distension of the stomach, I can only repeat that this condition does not appear to arise in childhood even after anæsthetics. From the disappointing results obtained in two cases I would go very far to avoid this operation in these children, and the following considerations may appeal to Dr. Campbell's rather particular sense of what is "irrational":—

First, the degree of persistent obstruction in duodenal ileus is comparatively slight, and the more serious obstructive vomiting only arises when the compression of the duodenum is increased by gastric distension. The prevention of this by gastric lavage and careful dieting enables slow but satisfactory progress to be made.

Secondly, the operation is theoretically unsound as it leaves the flow of bile still obstructed, and there may arise later troublesome vomiting of bile necessitating the persistent use of a low fat diet. In adult cases, in so far as operation is still undertaken, gastro-jejunostomy has been replaced by duodeno-jejunostomy, but this alternative is not available except in the very rare examples of gross mega-duodenum.

Lastly, to advocate operative treatment leaves out of consideration all the slighter cases which really constitute the most interesting aspect of chronic duodenal ileus as it occurs in early life. Such cases masquerade as examples of congenital anorexia: the gastric stasis and catarrh lead to such habitual refusal of food that often vomiting is little seen until the child is old enough to be pressed to take more food than it wants. The recognition of an obstructive factor in this group may be difficult, but the progress made under medical treatment is very satisfactory.

With regard to the minor point of using a weak alkaline solution instead of normal saline for gastric lavage in order to remove the mucus from the stomach more efficiently, I wrote that "in spite of the criticisms by biochemists" I had never seen any harm from its employment. May I suggest to Dr. Campbell that a judgment based upon clinical experience, though possibly erroneous, is not "irrational"?

I am, Sir, yours faithfully,

Harley-street, W., Nov. 25th. REGINALD MILLER.

THE MEDICAL PROFESSION IN NATIONAL EMERGENCY

To the Editor of THE LANCET

SIR,—The British Medical Association has recently circularised its branches asking each to appoint an emergency officer whose business will be to find out the intentions of all members of the medical profession in their area, in any future national emergency. The Committee of Imperial Defence has requested the Association to obtain this information for them, and doctors will be requested to notify their intentions under one of the following heads: (1) those willing to accept whole-time service at home or abroad; (2) those willing to accept part-time service at home; and (3) those willing to offer emergency service for the medical care of civilian casualties following air raids, &c., (*a*) in any part of the country to meet local emergency, or (*b*) in their own areas.

The preliminary arrangements for this attempt to organise the doctors on military lines in peace-time have been carried out under conditions of the utmost secrecy. The medical profession generally has not been consulted, nor, indeed, have the individual members—or even, as far as we are aware, the branches of the British Medical Association. Moreover, until the work of the emergency officers had actually commenced, there had been practically no comments or discussion in either the medical or lay press.

It is perfectly true that in the form that is sent out by some emergency officers the doctors are being told that "any statement of intention will be regarded as confidential unless an emergency arises." What they are not told, however, is what may be considered to constitute an emergency, and what will be done with the information then. Is an extensive withdrawal of labour a national emergency? Or a war of aggression such as is being carried out by Italy against Abyssinia, or Japan in China?

Surely, in spite of its harmless appearance, this census of the profession is really an attempt to get the doctors blindly behind the present Government in any catastrophe that may result from its present class-biased policy, or in any war that may be forced

upon it as the result of its vacillating policy or abandonment of pooled security through the League of Nations. Is it not possible also that the Government may be desirous of persuading the public as to the practicability of its air-raid and anti-gas precautions by demonstrating the large proportion of the medical profession that is willing to accept service in case of need?

Most doctors have commitments and responsibilities to their panel and other patients, as well as, in many cases, contracts with public or private organisations, institutions, and hospitals. How can they possibly say whether they are justified in disregarding these until they have some idea of the nature and extent of the national emergency in question?

We are, Sir, yours faithfully,

SOMERVILLE HASTINGS,
President, Socialist Medical Association of Great Britain.

CHARLES BROOK,
Hon. Secretary.

Nov. 27th.

*** The Government has decided that this country should now prepare itself efficiently against possible war, and the B.M.A. inquiry is a natural and necessary consequence of this decision. Our correspondents are no doubt right in thinking that the Government's hand would be strengthened by a cordial response from the medical profession, and that those who answer favourably will habituate themselves to the idea of war service on whatever occasion it may be demanded of them. In replying to the questions, however, it is open to medical men and women to make any declaration or reservation they think fit; and Dr. Anderson, as medical secretary of the British Medical Association, has announced that they will have an opportunity every year of restating their wishes. Any form of pressure exerted by emergency officers would be strongly, and rightly, resented. —ED. L.

TRENDS OF HOSPITAL POLICY

To the Editor of THE LANCET

SIR,—May I presume to say how much I have admired Grains and Scruples IV "From a Salaried Surgeon" in your last issue. It seems to me to sum up exactly the present most lamentable trends of official medical policy and, what is more important, to suggest the remedies. What to my mind is so unfortunate is that these trends seem almost certain to become, or indeed have become, the settled hospital policy of most local government authorities. There are of course a few striking exceptions. I cannot help thinking that as a result the science and practice of medicine will deteriorate, at first perhaps slowly, but later with great rapidity in this country.

I am, Sir, yours faithfully,

ERIC WORDLEY.

Plymouth, Nov. 29th.

PROTEIN AND GOUT

To the Editor of THE LANCET

SIR,—If I have not mis-read him, your generous and genial reviewer of the seventh edition of my Minor Maladies (*Lancet*, Nov. 20th, p. 1197) is of opinion that inasmuch as gout has decreased, and the consumption of protein has increased over a large given period, the two stand in no causal relationship to one another. As to the facts there can be no doubt whatever; but the deduction is not so certain. Gout is such an elusive entity; its geographical distribution, the passing of the big toe variety, its capricious variations in the same person, and other baffling features, all render it a very unsafe basis for dogmatism. And in truth I did not mean to be dogmatic—only provocative. I nevertheless do most firmly believe with Chittenden and Hindhede that protein even in what would seem to be reasonable quantities fosters the gout rather than frustrates it, and I am quite convinced that our forefathers were correct in attributing the majority of cases to an excess of protein in the form of flesh foods. Moreover, the plot thickens. There are already two forms of protein, the "good" and the "not-so-good," and it is fairly safe to prophesy that there will soon be as many forms of protein as there are of gout. What combination of them, if any, will prove to be the villain?

I am, Sir, yours faithfully,

LEONARD WILLIAMS.

London, W., Nov. 25th.

PRESCRIPTIONS BY DRUGGISTS

To the Editor of THE LANCET

SIR,—The old-fashioned chemist, whose willingness to oblige "respectably dressed females" at a charge of 3*s.* 9*d.* apiece, to whom you referred in a footnote to a letter signed Ph.C. last week, lived in a bygone age. Counter prescribing has been superseded by newspaper prescribing and most people who go into a chemist's shop know exactly what they want and insist on having it. The prescribing chemist is a rare bird to-day; education tends to make a man capable of recognising the difference between *meum* and *tuum*. As evidence of this I submit the following advertisement which the members of a North of England pharmacists' association have prepared for insertion in a local newspaper:—

"There are doctors and pharmacists. The doctor should always be called in when any member of the family shows symptoms which perplex the household; it is best to do it at once and learn for certain whether there is, or is not, anything really the matter. The doctor is a member of a profession which is closed to those who have not been specifically trained and educated to enable them to satisfy boards of examiners that they are fit and proper persons to practise as doctors, or, in other words to advise and care for people who are not up to the mark and require medical advice and attention.

"Then there are the pharmacists; this is also a closed craft; that is to say closed to all but those who have served an apprenticeship, attended classes and lectures and received laboratory training and instruction in accordance with a long curriculum of study laid down by Act of Parliament and have finally passed tests of a most severe kind, to prove to the satisfaction of the Privy Council and the Pharmaceutical Society of Great Britain that they are well qualified to dispense medicines and deal generally in drugs and all the accessories to health which are sold by retail.

"Just as nobody in his proper senses would expect an unqualified person to attend him on a bed of sickness, but would send for his doctor, so it is unwise and illogical to buy drugs and medicines from any place other than a chemist's shop."

But of course there will always be Tom Tiddler's ground.

I am, Sir, yours faithfully,

F. C. GOODALL.

Whitehall-place, S.W., Nov. 27th.

WESTMINSTER CHILD WELFARE CENTRE. — On Nov. 25th the Queen opened the new maternity and child welfare centre in Bessborough-street, erected by the Westminster city council at a cost of over £50,000. The welfare centre, which is administered by the council, uses the ground floor of the house, while on the upper floors there is a day nursery equipped and managed by the City of Westminster Day Nursery Association.

PUBLIC HEALTH

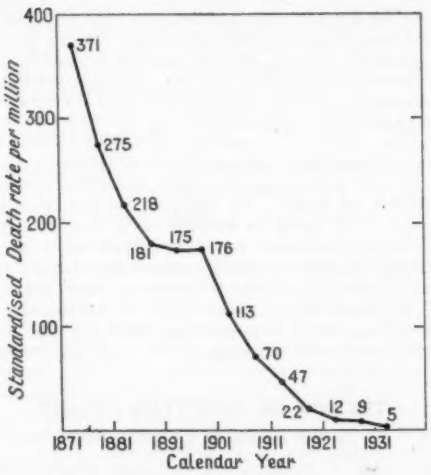
Notification of Pregnancy

THE question of notifying pregnancy has been raised on many occasions since the late war, but except in Huddersfield, where Dr. S. G. Moore, then medical officer of health, introduced a system of voluntary notification fourteen years ago, the proposition has obtained little support. It will probably come up again shortly in connexion with the Government's concern over the threatened fall in the population, and before it becomes a political issue it should be reconsidered in its administrative and medical aspects. Now that we have the aid of biological tests the diagnosis of pregnancy, at all events after the third month, presents no difficulty; as this notification interferes no more with the private relationship of doctor and patient than does notification of disease, with which private practitioners have no quarrel, the strictly medical objections are negligible. The administrative difficulties are many and serious. When it was suggested that notification of pregnancy might help us to overcome the menace of factitious abortion it was pointed out that those women likely to interfere would keep out of the light—which they could do easily, for abortion is seldom practised after the woman's condition is obvious. The scheme in Huddersfield, introduced by Dr. Moore and continued by his successor, Dr. John M. Gibson to the present day, aimed at reducing the high maternal mortality of that town, the argument being that if women notified their condition early in pregnancy they could be kept under observation and many dangers thereby arrested. This has apparently been successful, for according to Dr. Gibson's report for 1936, of 11,417 pregnancies notified in the past fourteen years the fatality was 2·97 per thousand, whereas amongst 10,539 deliveries in which pregnancy had not been notified the fatality was 9·2. The two series are not strictly comparable, but the difference in their fatalities is striking.

It is perhaps unlikely that compulsory notification of pregnancy would be introduced nationally unless some benefit were to be made contingent upon it, providing an inducement which if it was substantial would assure the notification of all pregnancies except in women not needing the benefits, or those in whom the secrecy of their condition overrode the benefits promised. The latter would include those intending to commit abortion. Moreover, as notification would not be required until pregnancy was well established it would not help us either in criminal, or natural abortion. Whether it would reduce mortality and morbidity by allowing more continuous and active antenatal supervision than is obtained by other means is doubtful. The opponents of the Huddersfield scheme point out that even amongst the notified pregnancies the fatality-rate is not very good and is inferior to that of districts where notification is not in practice. It might well be that in districts where the maternal mortality is persistently high and in those where the midwifery service is poorly developed, notification of pregnancy would lead to improvement, and that in those with persistently good records no appreciable benefit would result. If some benefit such as a subsidy were dependent upon it, notification might raise the birth-rate, but unless the benefit was great it would hardly do so amongst that class of the population in which it is most desired. So far, the minor reliefs, such as reduction of income-tax on behalf of children, have produced no obvious increase in the birth-rate and it seems doubtful if any offer of the State at present would be an inducement to produce children except amongst the poorest section of the community.

Typhoid in Our Generation

The decline in the death-rate from typhoid and paratyphoid fevers that has taken place in this country in the course of a lifetime (shown in the accompanying diagram) is too well known to require more than the briefest of references. In 1871–75 the standardised death-rate was 371 per million living, or 74 times as high as the corresponding figure of 5 per million recorded in 1931–35. This tremendous change took place, the diagram shows clearly, in two phases. Between 1871–75 and 1886–90, a space of fifteen years, the death-rate was halved. In the next ten years no further change took place; there was a distinct pause between 1886–90 and 1896–1900.



A second rapid phase of improvement then set in, which the quinquennial figures show to have continued without check to the latest date. Quite possibly even this heavy fall is an understatement, since typhoid would be more frequently diagnosed as a cause of death to-day than in the past.

The first phase of improvement in mortality may well be attributed to the improvement in the water-supplies and the drainage systems of the country. "After 1875 something *had* to be done, sooner or later, even by the most thick-skinned local authorities, in areas where sewage was used for drinking purposes." [1] Such action on a wide scale was followed by a period of stagnation. Then there came recognition of the problem of the carrier—the importance of personal as well as communal hygiene—and a renewed downward course, assisted no doubt by an increasing and stricter attention to the water-supplies in still backward areas.

What is, perhaps, not so generally recognised is that the extremely low death-rate to-day, low that is in relation to a large and highly urbanised population, is not incompatible with an absolutely large number of cases occurring annually. In the ten years 1927–36 a total of nearly 25,000 cases were notified and 2821 deaths registered. During this period, however, the incidence has varied consider-

[1] Greenwood, M., Epidemics and Crowd Diseases. London, 1935.

ably (see Table I). From some 3500 cases in 1927 and 1928 the level fell, somewhat irregularly, to only 1200 cases in 1934. Since then a distinct increase has occurred, the relatively high figure for 1936 being,

TABLE I—CASES OF ENTERIC FEVER NOTIFIED IN ENGLAND AND WALES (including non-civilians and cases in port sanitary districts)

1927	*1928*	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*	*1936*
3546	3541	2870	2964	2290	2544	1758	1213	1750	2490

of course, partly due to the large epidemic in Bournemouth and its adjacent areas. In 1937 there have been recorded 1812 cases up to the week ending Nov. 20th. In the main these large absolute figures are derived from isolated cases or from very small groups of cases. For instance, if the administrative areas be taken as units, we find, in each of the years 1935 and 1936, that cases were notified, largely in ones or twos, from about one-third of the rural areas and one-third of the smaller urban areas, and from nearly all the big centres of population, the county and metropolitan boroughs. Relative to the population at risk the incidence, and mortality, has been slightly higher in the small towns than elsewhere and lowest in the large urban aggregates (see Table II).

TABLE II—ATTACK-RATES FROM ENTERIC FEVER PER MILLION OF POPULATION IN 1932–36

Area.	Rate.	Area.	Rate.
England and Wales ..	48	South-West	63
Greater London	47	Wales	26
Remainder of South-East	55		
North	49	County boroughs ..	37
Midland	38	Other urban districts	55
East	60	Rural districts ..	53

There have been also considerable geographical differences in reported incidence, the rates for Wales and the Midlands being noticeably low in recent years.

TABLE III—NUMBER OF CASES NOTIFIED IN TEN AREAS IN 1932–36

Area.	1932.	1933.	1934.	1935.	1936.
Ryton U.D. (Durham) ..	39	1	0	6	0
Malton U.D. (North Riding)	249	1	1	0	0
Denby and Cumberworth U.D. (West Riding) ..	65	1	0	0	0
Northampton R.D. ..	10	82	2	3	2
Ashington U.D. (Northumberland)	1	53	3	5	0
Lanchester R.D. (Durham)	0	1	91	19	0
Ipswich C.B.	5	0	2	52	3
Lowestoft M.B.	4	6	1	98	8
Poole M.B.	3	1	2	6	206
Bournemouth C.B. ..	3	3	0	4	289

These local rates for a short period of years are, naturally, influenced to some extent by localised epidemics, and such exacerbations of incidence are, perhaps, a little more frequent, even to-day, than is generally realised. Table III shows ten of the more striking departures from the normal annual figures for the areas concerned that took place in 1932 to 1936. The task of the public health officer is, of course, to prevent such epidemic extensions from the still absolutely large number of isolated cases spread throughout the country. In the last five years 169 of the 1070 deaths from enteric, or 15·8 per cent., have been attributed to paratyphoid. In the same five years the deaths per million living have been 2·7 at ages under 15, 6·3 at ages 15–34, 5·8 at 35–54, and 6·0 at 55 and over. The mortality is low in childhood but differs little at later ages. In childhood and at ages over 55 there is also little difference between the mortality-rates of the two sexes. In adolescence and middle life the mortality of males is about 1 per million higher than the mortality of females.

The normal seasonal curve for England and Wales shows a low and fairly stable level from January to May (some 20–30 cases weekly), a slow irregular rise from June onwards, and a peak usually in September or October (some 60–80 cases weekly), followed by a fairly rapid fall to the end of the year.

The Typhoid Outbreak in Croydon

This outbreak is abating. Since Wednesday of last week when seventeen fresh cases were reported, the numbers have diminished from day to day and the new cases have been milder in onset. In the twenty-four hours up to noon last Wednesday only 5 cases were reported, bringing the total number of cases known or suspected during the present outbreak up to 248, while the number of deaths remains at 10. What the principal Croydon weekly has called "an attack of mass hysteria" is also abating within the area affected, although the outlying districts seem to have been living in daily fear of infection. After the practitioners' meeting on Nov. 24th, Dr. S. A. Forbes, the secretary of the B.M.A. branch, spoke of needless alarm among the public which has meant a very trying time for the medical profession. This alarm was countered by a banquet at the Greyhound Hotel to which press representatives were invited, when a photograph was taken of the Mayor, the president of the Chamber of Commerce, and the local Member of Parliament eating watercress. A welcome action on the part of the local authority has been to throw open free all public lavatories so that people can wash their hands without charge. Will this privilege, once given, ever be withdrawn? We hope not. As already announced, the public inquiry into the outbreak will open at Croydon Town Hall on Monday next at 11 A.M.

A Case of Small-pox

A notification of small-pox at Hyde, Cheshire, appears in the Registrar-General's weekly return, the first after an interval of twelve months. The patient, we learn from Dr. F. W. Campbell Brown, was a man of 77 who took to his bed with fever on Nov. 6th and had a rash on the 10th, but no doctor was called in until the 13th when Dr. Brown saw him in consultation with the family practitioner. Two days later the rash was becoming pustular and there was no doubt of the diagnosis of variola major of the discrete type semi-confluent on the face. The origin of the infection is in doubt; the patient seems however to have visited an open market in a neighbouring town on Oct. 25th, the probable date of contact. No secondary cases have come to light, the only direct contacts being the nine occupants of the house, as the man, being old and feeble, had remained in bed from the onset. All the contacts but one bore vaccination scars either from infancy or during the war period. Seven of them were revaccinated at their request. The patient himself had been vaccinated in infancy.

OBITUARY

ALEXANDER HILL GRIFFITH, M.D. Aberd., F.R.C.S. Edin.

Dr. Hill Griffith, who died at Woking on Nov. 24th, had retired there many years ago after a very full life as ophthalmic surgeon in Manchester. Born in 1858, the seventh son of Charles Fox Griffith, J.P., of Aberdeen, he passed easily through grammar school and university and had taken the qualifying examination before he came of age. Having taken his M.B., C.M. Aberd. in 1880 he went to Manchester as house surgeon at the Royal Eye Hospital, working under David Little, and soon acquired the interest in the physics of the eye which remained the major interest of his life. Some of his work on the field of vision has remained classical. On leaving the hospital he started practice on his own as ophthalmic surgeon, and although successful as a consultant his hospital work still came first whether at the Royal Infirmary or the Eye Hospital. He was an inspiring teacher and his post-graduate classes at the Eye Hospital were always well attended, while as a believer in individual teaching he felt obliged to restrict the number admitted to any one class. Writing no book of his own he contributed freely to the transactions of the Ophthalmological Society and to various systems on diseases of the eye, especially those of the choroid, vitreous, and lacrymal apparatus; for some time hardly a year passed without some publication on intra-ocular growths. Outside his professional work his chief, but subsidiary, interests were golf and music. Some time ago he developed bronchitic trouble from a kind of influenzal infection but, it seemed, recovered fully after a cruise to the Canaries. His younger brother, Prof. T. Wardrop Griffith of Leeds, survives him.

THE LATE PROF. H. C. JACOBAEUS

Prof. Jacobaeus, to whose death a brief reference has already been made in these columns, was born in Sweden in 1879. His early scholastic career was not particularly distinguished, but he was no more than 25 when his thesis for the doctorate, on Paget's disease of the nipple, attracted considerable attention. In 1914 he was put in charge of the Maria Hospital in Stockholm, and in 1916 he became professor of medicine at the Karolinska Institut. Since 1925 he was chairman of the Nobel committee of this body. He was also chairman of the Swedish Medical Society in 1933 and 1934, and since the former year he has been a corresponding member of the Royal Society of Medicine. Last summer he undertook a course of lectures in America, and last autumn he was one of the principal speakers at the International Tuberculosis Conference in Lisbon. For about a year he had been subject to heart attacks which he himself suspected were anginal, but his death on Oct. 29th was preceded by illness lasting less than 24 hours.

Important as were the earlier histological and serological researches undertaken by Jacobaeus, they came to be overshadowed by the international fame which his clinical work brought him. From 1910 onwards he concentrated on diagnostic and therapeutic researches with special reference to diseases of the lungs. It was in 1910 that he published his first work in this field, a treatise on the visual examination of serous cavities. From thoracoscopy he proceeded to the cauterisation of pleural adhesions preventing the collapse of lungs during artificial pneumothorax treatment. In 1914, with Dr. H. Tideström, he published his first account of this procedure. Such cauterisation had already been attempted under X ray control, but the superiority of cauterisation under direct visual control soon became evident, and for the rest of his life Jacobaeus devoted much of his time and energies to perfecting his system, which, as one of his biographers, Prof. Israel Holmgren, has pointed out, is of such transcending importance that "one can now say that an institution for the treatment of pulmonary tuberculosis unequipped for the cauterisation of adhesions according to the Jacobaeus method cannot, in fact, fulfil its mission."

Dr. F. B. GRINNELL, who died at Beaulieu, Hants, on Nov. 17th, had just retired to the New Forest after relinquishing his post at Harvard. Born in 1887 he graduated with honours at Harvard medical school in 1913, and stayed on in the department of preventive medicine and hygiene. In 1915 he served with the Red Cross sanitary commission in Serbia, and two years later was transferred to the Harvard surgical unit attached to General Hospital No. 22, B.E.F., with a temporary commission in the R.A.M.C. Later he was bacteriologist to Mobile Laboratory No. 1, and remained at Cologne with the Army of Occupation, being awarded the M.C. He then returned to Harvard as assistant professor of bacteriology and immunology.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 20TH, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 1 (Hyde M.B., Cheshire); scarlet fever, 2590; diphtheria, 1634; enteric fever, 97 (31 "expected"); pneumonia (primary or influenzal), 781; puerperal pyrexia, 146; cerebro-spinal fever, 16; acute poliomyelitis, 28; acute polio-encephalitis, 2; encephalitis lethargica, 2; typhus fever, 1 (Bristol); relapsing fever, 1 (Llandilo U.D., Carmarthen); dysentery, 228; ophthalmia neonatorum, 87. No case of cholera or plague was notified during the week.

Of the cases of dysentery 69 were reported from 17 London metropolitan boroughs (Holborn 16, Woolwich 10, Hackney 6, Shoreditch and Kensington each 5); 43 from 11 urban and rural districts in Surrey (Carshalton 13, Wimbledon 9); 15 from Middlesex (scattered); 12 each from Luton and Birmingham; 6 from Bilston.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 26th was 3935, which included: Scarlet fever, 937; diphtheria 1557 (diphtheria carriers, 19); measles, 155; whooping-cough, 298; puerperal fever, 17 mothers (plus 9 babies); encephalitis lethargica, 285; poliomyelitis, 10. At St. Margaret's Hospital there were 22 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 125 great towns,[1] including London, there was no death from small-pox, 4 (2) from enteric fever, 14 (0) from measles, 2 (0) from scarlet fever, 13 (3) from whooping-cough, 38 (8) from diphtheria, 43 (14) from diarrhœa and enteritis under two years, and 42 (10) from influenza. The figures in parentheses are those for London itself.

London and Croydon each reported 2 deaths from enteric fever. Liverpool had 8 fatal cases of measles, Newport 2. Diphtheria was fatal in 19 great towns, Liverpool and Birmingham each reporting 5 deaths, Manchester 3.

The number of stillbirths notified during the week was 260 (corresponding to a rate of 42 per 1000 total births), including 45 in London.

[1] Crosby (Lancs) with 55,550 inhabitants was created a municipal borough on Nov. 9th, 1937.

PARLIAMENTARY INTELLIGENCE

POPULATION

ON Nov. 29th in the House of Commons Sir KINGSLEY WOOD, Minister of Health, moved the second reading of the Population (Statistics) Bill. It was generally agreed, he said, that the population problem was not one which could be left to look after itself. It was one which considerably affected our social and economic policy, as well as our national destiny. Anxiety as to the future trend of population was growing in many nations in Europe to-day. So far as our own country was concerned, until recently the trend had been unmistakable, and if certain assumptions were accepted our population would fall in 30 years to 35 millions, and in 100 years to 5 millions. In 1871 our birth-rate was 35 per 1000 of the population; in 1901 it had dropped to 28; by 1921 it had further declined to 22; and in 1933 it had reached the low figure of 14. In the immediate future our population would contain a much larger proportion of old people. On the other hand, it was true that since our birth-rate reached its lowest level in 1933 it had, during the last three complete years, remained without further decline and with a slight upward tendency. Too much must not be built upon this, but the more the check in the decline was prolonged the more hope was offered that continued decline was not irresistible or inevitable. (Cheers.) If as a people we could get further facts and information it might show that forces existed having an upward tendency, and which when identified might well provide a basis for constructive policy. Much more information on the whole subject was required before policy could be considered. We had delayed in this matter too long and were behind other nations in the collection of population data. It had been suggested in certain quarters that under this measure a new dictatorship would be established and that inquiries of a certain nature were designed to ascertain private secrets and that there would be a general resentment and refusal in respect of those questions. The position actually was that fertility inquiries were not new, and all but three of the matters specified in the schedule of this Bill had previously been the subject of question and answer by many millions of men and women, and there had been no resentment, but rather a proper appreciation of the reasons for such questions and a general and full compliance with the requirements approved by Parliament. There was no ground for the suggestion that the answers so made would not be treated with complete secrecy, or not respected as wholly confidential. He believed that this Bill would enable the Government to obtain essential information in a matter which was vital to the future well-being of the nation, and later on, when they were in a position to proceed with a proper investigation of the causes of our birth-rate problems, the provisions of this Bill would enable the necessary information to be compiled with proper regard to confidence and also fully preserving the rights of Parliament.

Mr. PETHICK-LAWRENCE moved :—

That this House, while recognising that the collection of some additional facts regarding the population may be desirable, cannot assent to the second reading of a Bill which instructs the registrars to elicit confidential and intimate information not urgently required for statistical purposes.

The Bill, he said, did a great deal more than was really required. The people who really desired statistical information about the vital facts of life had urged on the Government repeatedly that they should have a quinquennial census which would give an up-to-date picture from time to time throughout the whole period.

Sir FRANCIS FREMANTLE said that several commissions had produced voluminous reports on this problem, but the difficulty of making their conclusions operative over the country at large was that they were not broadly based on statistics, and were not sufficiently comprehensive. Those who first thought of this problem thought of it simply in terms of contraceptives, but they had to get beyond that. That was the means to the end. One thing we did not know, and which was the most difficult, was whether there was some vital factor in modern civilisation—not a voluntary factor, but some involuntary unconscious factor—that was undermining the fertility of the people generally in either sex. The only way in which the question could really be tested was by taking figures over the whole nations, as far as they could get them, over a series of years beginning at one year and continuing for every birth that occurred. They must include the whole range of fertility and get as many figures as possible. They must not try to circumscribe the facts that were to be obtained. They must face up to the fact that there would be misrepresentation and realise the intense gravity of the subject. He hoped that hon. Members would not obstruct the second reading of such an essential Bill as this, but leave questions of criticism for the Committee stage.

After further debate, in the course of which the Bill was subjected to considerable criticism from various quarters of the House, Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, said this small Bill was brought forward as a means of obtaining information upon which large-scale action might in the future be taken. They were not attempting to create a new statistical intelligence system, but merely to stop a small gap, though a vitally important one, in the existing information. The argument that investigation should precede action was reinforced by what was happening in Germany and Italy, where very drastic action has been taken. He could assure the House that there was no plot to turn the Registrar-General into a sort of Paul Pry. The Minister would look into all the matters raised in the debate and would try to remove apprehensions as far as he could.

The motion for rejection was negatived by 197 votes to 125 and the Bill was read a second time.

A DEBATE ON MALNUTRITION

IN the House of Commons on Nov. 24th Mr. LEONARD moved :

That this House has noted with concern the convincing evidence of widespread malnutrition which is being intensified by rising prices, and regrets the continued failure of His Majesty's Government to take effective steps to deal with this grave and urgent problem of hunger and want in the midst of plenty.

He said that he was particularly pleased with the work of the Children's Minimum Council, but their report made very dismal reading. It was stated that 13 per cent. of the population lived in families where the income was ten shillings or less per head; these families included 23·5 per cent. of the country's children. He could not find much evidence of controlled group investigation on the pre-school child. One doctor had compared 125 school-children from a poor district with 124 from a well-to-do district. Of the poor children, 36 had evidence of malnutrition and 50 per cent. were below the standard of weight and height, whereas the well-to-do children showed no malnutrition; only 5 per cent. were below height and only 13 per cent. below weight. Only 20 per cent. of the poor, but all the better-class, children passed the test for anæmia. After quoting the statement of Sir John Orr that well-to-do infants had a death-rate of 30 per 1000 live births, while that in poorer districts was 100–150 per 1000, Mr. Leonard complained of the differences in the doctors' conception of malnutrition, which made him doubt their diagnosis. The report of the Committee on Malnutrition indicated the great advantage that could be gained

from curative diets in schools in the place of medicine. He claimed that this had been tried with success in Russia. The experiment known as the Oslo breakfast—in which the defects in the normal daily dietary in a household were made up in the form of a breakfast given to poor and rich alike—had reduced an infant death-rate of 46 per 1000 in 1931 to 30 in 1936. He pleaded for an extension of the experiment here, especially as London now had an infant mortality of 67 per 1000, Newcastle 84, and Glasgow 98. He asked what the Government were going to do with the information supplied to them by the Children's Minimum Council last July, drawing attention to the need for cheap milk for expectant or nursing mothers and children under five. It was not to be wondered at that a physical fitness campaign was necessary, seeing that in 1934, 1935, and 1936 over 60 per cent. of Service recruits were rejected as unfit. Workers were not receiving sufficient in wages and benefits to ensure a standard of nutrition that would make them able to fight for their country! Dr. Fraser, medical officer for Cumberland, who had been paying attention to the junior instruction centres, had reported that "many of the boys coming to the centre are too unfit even to want to play football." The League of Nations report on nutrition made it quite clear that the corrected death-rate in depressed areas exceeded that of a well-to-do area by 166 per cent.—and 4,000,000 people in this country were living in depressed areas. The Government knew what was required, because the Advisory Committee on Nutrition had stated that the consumption of fresh fruit, vegetables, and milk was just over half of what it ought to be. The League of Nations report indicated that the lowering of diets from 1914 to 1918 brought alarming results. He contended that the Government could help in this matter by realising that abundance was the order of the day; the only things in which there was scarcity were thought and willingness.

Mr. GEORGE GRIFFITHS, seconding the motion, said that a committee on dietetics set up by the Ministry of Health in 1932 had stated that the cost of maintaining children in an institution of not less than 200 inmates, and buying wholesale, was 4*s*. 6½*d*. per head. Owing to the rise in prices that meant 6*s*. to-day. If it cost 6*s*. a week to keep a child in an institution on those lines, how much more would it cost where the mother had to buy the food retail in pennyworths? Yet the children were getting only 3*s*. per week at the present time, and then they wondered why there was so much malnutrition. The people who were suffering to-day were first those on poor relief, secondly, the old-age pensioners, and thirdly, those who were living on compensation allowances.

Mr. HAMILTON KERR moved the following amendment:

> That this House has noted with satisfaction the action taken and proposed to be taken to improve nutrition, and approves the continuous and successful efforts of His Majesty's Government to promote better health and social conditions in this country.

He said that the cost-of-living index figure in 1930, a year of gradually deepening depression and rising unemployment, when goods from abroad were flooding the home market, was 138. In 1937, a year of record employment and high levels of production, the figure was 145, or a rise of 3¼ per cent. Wages since 1930 had risen by 4 per cent., which cancelled out the rise in prices. He went on to quote the statement of the Advisory Committee on Nutrition that the consumption of milk in this country was only half what it ought to be and said that all parties were anxious to see a more vigorous milk policy. It was an interesting fact that whereas 92 per cent. of the schools were included under the milk scheme, not more than 50 per cent. of the children availed themselves of the milk supplied; there was certainly need for more vigorous propaganda to bring home the value of milk, especially to growing children. A great deal could be done in regard to further research into nutrition, and he welcomed the inquiries that were being made into income distribution and household budgets. He hoped that the House would have an authoritative pronouncement on food values, and that after the investigation into the whole question of nutrition had been completed every local authority, in conjunction with the Ministry of Health, would be able to circulate into every home specialised knowledge on the values of food. If this were done public health would immediately improve and disease decline.

Sir ARNOLD WILSON, who seconded the amendment, said that during the past ten years deaths from diseases directly or indirectly due to malnutrition had dropped for the most part by half—rickets by half, intestinal tuberculosis by half, infantile convulsions by a third, diarrhœa and enteritis by half, diseases of pregnancy by 10 per cent. Deaths under one year had dropped from 70 to 56 per 1000, and the Chief Medical Officer had indicated that the public health had been thoroughly well maintained. Malnutrition due to insufficient means did exist, but it was to a relatively small extent among families of unskilled wage-earners in regular employment. There was no evidence as yet that the rates fixed by the Unemployment Assistance Board were inadequate compared with the figures and cost of living for 1929. He admitted that the problem of long-continued unemployment was serious, but it was being tackled with success. After a thorough inquiry into adulteration the Minister of Health hoped shortly to introduce new legislation. The Government were continuing their campaign for improved health and nutrition and were going ahead on a broad front with the assistance of a great number of persons of goodwill outside Parliament.

Viscountess ASTOR said that as the Government had done so splendidly in regard to the slums she hoped that the House of Commons would not let them go to sleep about nutrition. She pressed for a national policy on the subject.

Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, said that the figures in the latest annual report of the Chief Medical Officer of the Board of Education showed that out of 1,680,000 school-children examined only 0·7 per cent. were suffering from bad nutrition, and Sir John Orr, who was so often quoted on this matter, had never suggested that there was real hunger. It was irrefutable that every man, woman, and child in this country was enabled to obtain at any rate the minimum necessary for subsistence. The first report of the Advisory Committee on Nutrition certainly gave no support to the alarmist views held in certain quarters. The Committee pointed out that the consumption per head of most foodstuffs had increased since before the late war, the largest proportionate increases having been in condensed milk, fruit, butter, vegetables (other than potatoes), eggs, tea, margarine, and cheese. One disquieting sentence in the report was that the consumption of milk in all forms per head of the population was too low. The Government were giving unremitting attention to the problem of making good that deficiency. The number of children who were not taking advantage of the milk-in-the-schools scheme was giving considerable concern to the Board of Education, and an important item in the Government's health campaign was publicity in schools about the health value of milk. As examples of what the Government are doing to promote nutrition among other classes of the community Mr. Bernays instanced the supplies of milk and other foods to expectant and nursing mothers and children under school age. Those powers, he said, were now being exercised universally. Following the report of the Nutrition Committee, general circulars were issued by the Minister of Health and the Secretary for Scotland asking authorities to review their arrangements for the supply of meals, to remove any undesirable restrictions on the supply,

and to make sure that the income scales adopted for free or cheap supplies did not make it difficult for any mother to take advantage of the arrangement. The response had been very satisfactory; nearly all the welfare authorities—402 out of the 412 to whom the circular was addressed—had replied indicating that the importance of the question was realised and that where the arrangements had fallen short they were doing their best to improve them; 98 authorities had increased the period during which milk was supplied, 62 had increased the quantity of milk supplied, and 42 had adopted a more liberal scale. He claimed that the present Government had done more than any other Government to bring to the attention of the nation the importance of nutrition, and not merely of this nation but of all nations. As regards the question of the rise in prices, in both unemployment assistance and public assistance, the Ministers responsible had recommended that in giving assistance the cost of living should be taken into account. The nation was better fed and was healthier and happier than when the National Government came into power. Two diseases especially associated with malnutrition were tuberculosis and rickets. Mortality from tuberculosis was now only half what it was 25 years ago, and less than a quarter of what it was 50 years ago. Deaths from rickets were only half of what they were five years ago, and each year fewer people suffered from those diseases. He asked the House to reject the motion as a distortion and a caricature of the position of England as it existed to-day.

The motion was negatived by 202 votes to 140.

NOTES ON CURRENT TOPICS

Blindness in Scotland

In the House of Commons on Nov. 30th leave was given to Mr. CHAPMAN to introduce the Prevention and Treatment of Blindness (Scotland) Bill, a measure to enable local authorities in Scotland to make arrangements for prevention and treatment of blindness. There were, he said, 8738 blind persons of all ages in Scotland, and about £3000 was spent annually on their care. The Bill would give local authorities the same powers as were possessed by similar bodies in England and Wales. Those powers would be permissive.

In the House of Commons on Nov. 23rd the National Health Insurance (Juvenile Contributors and Young Persons) Bill was read the third time. On Nov. 30th the Bill was read a second time in the House of Lords.

QUESTION TIME

WEDNESDAY, NOV. 24TH

Nursing in Sanatoria

Sir JOSEPH LAMB asked the Minister of Health if, in the appointments he had made to the interdepartmental committee on nursing, he had given any representation to the interests of sanatoria for tuberculosis; and, if not, would he make an additional appointment of at least one person with special knowledge of this class of institution and the persons engaged in nursing there.—Mr. BERNAYS replied: My right hon. friend is satisfied that the experience represented on the committee is sufficiently wide to enable it to deal fully and competently with questions particularly affecting nursing in sanatoria.

Mechanical Ventilation in Gas-proofed Rooms

Mr. GROVES asked the Home Secretary whether, in connexion with air-raid precautions and the measures now being adopted, he was considering the necessity for the installation of poison-gas filtration apparatus for the introduction of purified air into gas-proofed rooms or chambers or decontamination centres for the general protection of the occupants, and particularly for the protection against poison gas of the aged, invalids, children, and foodstuffs, and for the protection of governmental, civil, and council servants whilst engaged in their duties during air-raids, the execution of which might be hampered by the wearing of gas masks; and whether any such suitable apparatus had been brought to the notice of the department concerned and was being considered.—Mr. GEOFFREY LLOYD, Under Secretary, Home Office, replied: The installation of mechanical ventilation in gas-proofed accommodation is normally only considered necessary (*a*) where the number of persons accommodated is greater than will permit of an allowance of 75 sq. ft. of surface area (floor, ceiling, and walls) per person; and (*b*) where the exacting nature of the work which is being carried on makes special ventilation essential. Except in these circumstances the usual methods of gas proofing without mechanical ventilation are considered to afford adequate protection against gas. A procedure exists whereby private manufacturers may be licensed to affix to filtration plants of their own design a Home Office mark certifying that the apparatus has been tested and conforms to a standard specification of performance. Two such designs are under investigation.

Prisoner's Treatment in Scottish Gaol

Mr. MCGOVERN asked the Secretary of State for Scotland whether he was aware that Francis Healy, who was a prisoner at Barlinnie Prison, Glasgow, was recently assaulted by six warders in his cell and rendered unconscious, was dragged to a padded cell, stripped naked, and again set upon by these warders, and left in a dangerous condition; that he was later in the same day certified by the doctor at Barlinnie as insane and removed to Gartloch Asylum; that this man was quite sane, and that he (Mr. McGovern) interviewed this man at Gartloch Asylum and examined his body, which was bruised from head to foot; if the right hon. gentleman would order an inquiry into this assault; was he further aware that the prisoner who first conveyed information to Francis Healy's parents and himself (Mr. McGovern) was again a prisoner at Barlinnie, and had been threatened by these warders because he conveyed the information; and what steps he intended to take to protect this prisoner.—Mr. ELLIOT: I am informed that on Sept. 10th this prisoner, who had been for some days in a depressed mood, suddenly became violent in his cell, where he broke 21 panes of glass and smashed furniture. Four warders entered the cell and found him in an aggressive condition, armed with a heavy piece of crockery and a piece of wood. A warder attempted to reason with him, but Healy threw the crockery at him causing severe bruising and cutting of the bridge of the nose, and in defence the warder struck him twice on the head with a baton. Healy, who was struggling and fighting violently, was then taken to a padded cell where he could not injure himself or destroy prison furniture, and his clothing was removed and searched in case he had in his possession broken glass or other articles dangerous to himself or to other persons. He was not rendered unconscious or left in a dangerous condition at any stage of the occurrence. On the same day he was certified insane by the prison assistant medical officer and another doctor and was removed under sheriff's warrant to Gartloch Asylum, where he is still. I do not consider that the circumstances of this particular case necessitate further inquiry. I am arranging that in any further case of outbreak of violence by a prisoner whose sanity is in any way in doubt the prisoner will be visited in the first instance by the prison medical officer, or if he is not available, by the governor. As regards the last part of the question, I am informed that there has been no threat of the kind referred to.

Mr. MCGOVERN: Is the right hon. gentleman aware that Dr. Dryden, medical officer in the asylum, states in his report that this man has shown no signs of insanity in the institution and also that the man suffered from two fresh gashes on the scalp, with stitches, bruising on both shoulders, on right considerable swelling; bruising very extensive, badly discoloured, bruising on the right thigh and leg, deeply discoloured and swollen, also left hand discoloured and swollen? Is the right hon. gentleman further aware that there is evidence from prisoners that these warders set upon him and violently assaulted him? Is he prepared to set up an impartial inquiry when I will place the full evidence before him and also the

statement of the medical officer that the man was not insane ?—Mr. ELLIOT: I have looked carefully into the papers on this case. Firstly the man has been certified insane by two doctors. That stands. Secondly the description of his injuries on the occasion in question are quite consistent with the account which I have given of the struggle in the cells. I do not think there is any case here for further inquiry.

THURSDAY, NOV. 25TH

Thefts of Drugs from Motor-cars

Mr. DE LA BÈRE asked the Home Secretary whether, in view of the frequent occurrences of neglect by medical practitioners and chemists to exercise care over the poisons and drugs which they had in their possession, he would draw the attention of the General Medical Council, the Medical Research Council, and similar bodies to the necessity for increased vigilance in these matters.—Sir S. HOARE replied: I presume the hon. Member has particularly in mind the thefts of drugs or poisons from motor-cars which have been left unattended by medical practitioners. I should have expected that the publicity now given to these cases by broadcast warnings and otherwise would have been sufficient to call attention to the need for the exercise of the utmost care; but I will consider the hon. Member's suggestion.—Mr. H. G. WILLIAMS: Will the right hon. gentleman take great care that the interests of agriculture are not prejudiced by any undue interference with the distribution of weed-killer containing arsenic ?—No answer was given.

The Definition of Silicosis

Mr. DE LA BÈRE asked the Chancellor of the Duchy of Lancaster, as representing the Lord President of the Council, when the report from the Medical Research Council dealing with the question of the definition of silicosis as affecting miners in this country, as distinct from the definition ruling in South Africa, would be made available to the public.—Capt. WATERHOUSE (Comptroller of the Household) replied: The investigation organised by the Medical Research Council into silicosis and allied conditions among coal-miners involves the clinical and radiological examination of a large number of workers, inquiry into their occupational histories, and parallel studies of the geological and other physical conditions of the pits. This work will necessarily take some time, and it is too soon to say when it will be possible to make a report.

Mr. DE LA BÈRE: Is my hon. friend aware that many men suffering from this lung disability are absolutely prevented from getting any redress; and are we bound to be governed by a definition from South Africa as to whether the thing is certifiable or not; and will he try to make some progress ?—Capt. WATERHOUSE: I will convey my hon. friend's remarks to my noble friend, but may I point out that the conference in South Africa was an international conference held there, and was not in any way a South African conference.

Imported Butter and Public Health

Mr. LAMBERT asked the Minister of Health whether imported butter made from the milk of tuberculous or diseased cows abroad could be detected by analysis at the ports of entry into Great Britain.—Sir KINGSLEY WOOD replied: Yes, Sir, if the milk had not been pasteurised and, in the case of tuberculosis, if the cows were actually yielding milk containing tubercle bacilli. I am advised that practically all milk and cream used for making imported butter is pasteurised.

Croydon Typhoid Outbreak

Mr. DAY asked the Minister of Health whether, in view of the increasing anxiety occasioned by the Croydon typhoid outbreak, he would state when the public inquiry to be held into the cause would commence and whether members of the public who might desire to give evidence at the inquiry would be allowed to do so.—Sir KINGSLEY WOOD replied: I understand that Mr. Harold Murphy, K.C., and the two assessors are holding an informal meeting this afternoon and I hope to be able to announce the date of the opening of the inquiry to-morrow or the next day. It will be appreciated that the time of the officers of the Croydon Corporation is at present very fully occupied with urgent executive duties in dealing with the outbreak and I am sure it will be generally recognised that the performance of these duties must be a first call for the present. I am advised that the fact that a short time must necessarily elapse before the opening of the formal investigation can be in no way prejudicial to the public health. As I have already stated, all possible effective steps have been taken by the corporation, acting in collaboration with officers of my Department, to safeguard the purity of the water-supply, and I am glad to have this opportunity of giving an assurance that, on the advice available to me, the public need have no further fear of infection from that source. As regards the second part of the question, the conduct of the inquiry will be in the hands of Mr. Murphy, but I have no doubt that members of the public will be given the fullest opportunity of tendering all relevant evidence that may be in their possession.

Preventive Inoculation

Mr. WILFRID ROBERTS asked the Minister of Health whether, in view of the successful suppression of an outbreak of typhoid at the Basque children's camp at Eastleigh in the summer by means of inoculation, it was proposed to recommend inoculation as a preventive measure in the Croydon area.—Sir KINGSLEY WOOD replied: The circumstances of the two outbreaks are different, and I am advised that general antityphoid inoculation in Croydon would not be beneficial. The protection by inoculation or otherwise of individuals resident in houses in which cases of typhoid are being nursed is a matter for consideration by the medical practitioner in attendance in the light of the special circumstances of each case.

Medical Collaboration and Epidemics

Lieut.-Commander FLETCHER asked the Minister of Health if he was aware of the lack of collaboration between doctors in private practice and the public health services, and its possible bearing on recent epidemics at Bournemouth and Croydon; and if he would set up a committee to investigate this subject.—Sir KINGSLEY WOOD replied: In so far as the question relates to events connected with the outbreak of typhoid at Croydon, I cannot anticipate the results of the inquiry. Every opportunity is taken by my department to emphasise the need for collaboration between the various branches of the medical profession and I am glad to say that there is increasing recognition of this need on the part of local authorities.

Commander FLETCHER: Is there in existence an Advisory Committee on Collaboration ?—Sir KINGSLEY WOOD: I do not think that there is any need for an Advisory Committee on Collaboration. What we want to do is to get the medical men in a district more closely in contact with the local authority's officers.—Commander FLETCHER: Is the report of the Consultative Council on Medical and Allied Services of 1920 being reprinted and made available to Members ? I understand that it is out of print.—Sir KINGSLEY WOOD: Perhaps the hon. Member will allow me to look at that question.

Milk Licences

Brig.-General CLIFTON BROWN asked the Minister of Agriculture what was the total number of licences issued to producers of milk, and the number of these licences issued to owners of attested herds, tuberculin-tested herds, and accredited herds, respectively.—Mr. MORRISON: The following is the reply:—

Producers registered under the Milk Marketing Scheme	146,898
Registered producers whose herds are attested	540
Registered producers who hold licences to sell tuberculin-tested milk	1,927
Registered producers who hold licences to sell accredited milk	21,023

These figures relate to England and Wales only, and give the position as at Oct. 31st, 1937.

The Cost of Free Milk

Mr. ANDERSON asked the Minister of Health if he would state the estimated cost of providing free milk to all

children under school age and to expectant mothers.—Sir KINGSLEY WOOD replied: The estimated cost of supplying one pint of milk free daily to all such persons in England and Wales is about 18 million pounds per annum.

Dental Mechanics' Wages

Mr. CLUSE asked the Minister of Health whether he would take steps to bring dental mechanics as employees under the National Insurance Acts under the operation of the fair-wages clause.—Sir KINGSLEY WOOD replied: I see considerable practical difficulties in the way of the adoption of the hon. Member's suggestion, but I will give the matter my consideration.

MONDAY, NOV. 29TH

Watercress and Infection

Mr. DONNER asked the Minister of Health whether he was aware of the serious plight of growers of watercress in north-west Hampshire and elsewhere resulting from the refusal of retailers to buy, in consequence of public fear of typhoid infection; and whether he could give an assurance that there was no evidence to show that watercress was responsible for the present outbreak and that the public incurred no danger by eating watercress, particularly when grown, as in Hampshire, a great distance from any known centre of infection.—Mr. BERNAYS replied: Yes, Sir, the attention of my right hon. friend has been drawn to press statements on this matter. While he could not properly express an opinion as to the cause of the present outbreak, pending the result of the forthcoming public inquiry, my right hon. friend may say that he has no evidence to suggest that it is in any way connected with the eating of watercress.

Post Office Employees and Inoculation Tests

Mr. LEACH asked the Postmaster-General how many employees were undergoing the inoculation tests sanctioned by him; where the tests took place; how many hours off work had been involved to those undergoing the test; and why the results were not to be communicated to his department.—Major TRYON replied: 307 members of the staff have undergone the tests. The tests have taken place in a room on official premises, and have involved less than an hour's absence in each case from official work. At the request of the staff associations the results are not communicated to the Department, and this request is in my opinion a reasonable one.

MEDICAL NEWS

University of Cambridge

On Nov. 27th the following degrees were conferred:—

M.D.—S. K. Sen, J. L. Lovibond, and L. P. Marshall.
M.B., B.Chir.—*D. H. Davies, *W. H. R. Jeremy, J. R. Owen, C. H. T. Bond, L. R. King, G. G. Ludgater, and D. D. Keall.
M.B.—*J. F. L. Walley, *E. J. Neill, *T. C. Stamp, F. C. Maddox, and A. H. Lankester.
* By proxy.

Sir Patrick Laidlaw, F.R.S., has been appointed Rede lecturer for 1938. The place and the subject of the lecture will be announced later.

Dr. G. S. Graham-Smith, Dr. G. H. Orton, Dr. Ffrangcon Roberts, Dr. F. G. Spear, Dr. Raymond Williamson, Dr. E. P. Cumberbatch, Dr. Peter Kerley, Dr. W. P. Philip, Dr. R. J. Reynolds, and Prof. Sidney Russ, D.Sc., have been appointed members of the committee for medical radiology and electrology for 1938.

University of London

At recent examinations D. A. S. Blair was successful in obtaining the diploma in psychological medicine with special knowledge of mental diseases. Hilda M. S. Davidson and S. H. Lubner passed in Part A of the examination.

Welsh National School of Medicine

At recent examinations the following candidates were successful:—

Obstetrics and Gynæcology.—O. D. Beresford, D. C. Brown, and Enid Powell.
Pathology and Bacteriology.—J. M. Bowen, Mary W. Bowen, G. E. Hosking, H. R. Hudd, H. V. Jones, C. W. D. Lewis, G. O. Lewis, Margaret Morgan and Margaret Parry.
Tuberculous Diseases Diploma.—Francis Gunaratna, Ahmed Abdul Hakeem, and Ahmed Said.

British Medical Association

Middlemore Prize.—The council of the B.M.A. will consider an award of this prize in 1939 for the best essay on the underlying causes of glaucoma, including notes on the lines of inquiry which have been pursued, with suggestions as to future research in clinic and laboratory. Further information may be had from the secretary of the association, B.M.A. House, Tavistock-square, London, W.C.

Royal Society of Edinburgh

A David Anderson-Berry gold medal, together with a sum of about £100, will be awarded in July, 1938, by this society for the best work on the nature of X rays in their therapeutical effect on human diseases. A similar award will be made every three years. Applications for the prize may be based on both published and unpublished work, and should be accompanied by copies of the relevant papers. They should reach the general secretary of the society, 22, George-street, Edinburgh, 2, by June 1st, 1938.

King's College Hospital

On Wednesday, Dec. 8th, at 8 P.M., Sir Joseph Barcroft, F.R.S., will address the Listerian Society on fœtal respiration.

Presentation to Dr. Worth

At a meeting of the Royal Medico-Psychological Association (reported on p. 1311) a presentation was made to Dr. Reginald Worth, who has retired from the post of hon. secretary after fifteen years' service.

British Institute of Philosophy

An address on the limits of science will be given by Prof. John Macmurray on Tuesday, Dec. 14th, at 8.15 P.M., at University College, Gower-street, W.C. Cards of admission may be obtained from the Director of Studies at University Hall, 14, Gordon-square, London, W.C.1.

Spanish Relief Work

The British Red Cross Society's contribution to this work, transmitted to the International Red Cross Committee, in money, medical and surgical supplies, and material, has amounted to nearly £1400.

National Health Campaign

Sir Kingsley Wood and Mr. Arthur Greenwood will be the principal speakers at the Colston Hall, Bristol, on Dec. 16th, at a meeting in support of the national health campaign. Mr. Geoffrey Shakespeare and Mr. C. G. Ammon, M.P., will speak at Stockport on Dec. 7th; Mr. Leslie Burgin and Lord Addison at Coventry on Dec. 10th; and Mr. Robert Bernays and Alderman W. T. Kelly, M.P., at Grimsby on Dec. 15th.

International Congress of Surgery

As we have already announced (Nov. 6th, p. 1113) the International Society of Surgery intends to hold its next annual congress in Vienna from Sept. 19th to 22nd, 1938. Dr. L. Mayer, the general secretary, informs us that the members of the British national committee are Prof. Grey Turner (convener), Sir Thomas Dunhill, Mr. J. E. H. Roberts, Prof. Lambert Rogers, and Prof. Archibald Young.

Course on Hospital Administration

A course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Western Hospital, Lawn-road, London, N.W., by Dr. William Gunn on Tuesdays and Fridays at 10.45 A.M. and on alternate Saturdays at a time to be arranged. The course will begin on Jan. 18th, and further information may be had from the medical officer of health, London County Council, Public Health Department (Special Hospitals), County Hall, S.E.1.

THE STUDY OF CANCER

THE British Empire Cancer Campaign presented at the annual meeting held at the House of Lords on Nov. 30th a report which follows the same pattern as last year but is shorter by some 80 pages. Space has been saved by the omission of tables showing the results of treatment at various centres. The bulk and cost of the volume could be further reduced another year, without affecting its admirable format, by the reduction of white space, notably between the reports from various centres and in the lists of names of those running them. We set out below a few of the features of the report.

Dr. Alexander Haddow, working at the research institute of the Royal Cancer Hospital (Free) directed by Prof. E. L. Kennaway, F.R.S., has carried a step further his previous observation on the influence of carcinogenic hydrocarbons. He has shown that in a small proportion of the spontaneous tumours of the mouse, as well as in grafted tumours, growth may be inhibited and the tumour may even regress. The chemical carcinogenic agents are of course the subject of many of the reports submitted. The various groups are being keenly investigated and their linkage analysed. A point of special interest is the possibility of the production of carcinogenic agents by chemical change which may occur in the living body.

Last year Mr. L. H. Gray, Ph.D., reported from the physics department of the Mount Vernon Hospital that an apparatus for the production of neutron was to be constructed. This work has now been completed and the biological effects of neutron radiation will now be studied. Reports from America make it essential to determine whether this will prove another and powerful weapon against tumours or whether its dangers are too great for practical therapy.

On the clinical side there is an interesting account of the new 4-gramme radium teletherapy unit at the Westminster Hospital. The output of the apparatus has been carefully measured and a platinum collar has been incorporated in the container providing a narrow field which will be used for cross-firing lesions in the mouth and upper air-passages. A large field of irradiation is also made possible by the use of two different containers, the radium being carried from one to the other by electrical apparatus worked from some distance away. The large aperture is being used for the treatment of osteogenic sarcoma. Sixty-three cases in all have been treated, seven by the new method designed to give uniformity of dosage.

A number of centres are now using the contact radiation method of Chaoul for superficial growths and figures should soon be available to show the comparative value of this form of treatment.

Dr. Percy Stocks, medical statistical officer at the General Register Office, London, has continued his analysis of the distribution in England and Wales of cancer of various organs. The maps supplied this year give some idea of the distribution of mortality in England and Wales from cancer of the tongue, mouth and tonsil, jaw, larynx, and bladder and prostate.

A noteworthy piece of work has been carried out at Newcastle under the direction of Mr. Frank Dickens, D.Sc., and Prof. W. E. Curtis, F.R.S. The effect of short wireless waves in the treatment of Jensen rat sarcoma and other animal tumours was the disappearance of a good proportion of tumours provided that a critical temperature was reached. The conclusion drawn was that no action of short waves that could not be attributed to heat had been disclosed, but that the effects of heating are in some ways analogous to those of radiation. It is possible that the method may become practicable for cancer therapy, but at present the effect is a local one. Its application to deep-seated tumours must be difficult. The results obtained by Dr. Thomas Lumsden and his associates on the serum treatment of spontaneous cancer of the breast in mice will disappoint those who hope that this will ultimately prove to be a method applicable to the disease in the human subject. Of 500 mice treated for spontaneous cancer of the breast only 10 per cent. were cured. With the consent of Dr. Lumsden one of his assistants, Mr. H. J. Phelps, D.Phil., is to repeat the work on cancer sera at the Imperial Cancer Research Laboratories. This work will be under the direction of Dr. W. E. Gye and of Prof. James McIntosh.

The Duke of Gloucester, the president, who took the chair at the meeting to which this report was presented, drew attention to the value of the periodic conferences between laboratory and clinical workers for the Campaign. £43,000 would be provided for the support of cancer research during 1938, of which £6000 would be devoted to the coördination of clinical research. Lord Horder in submitting the report said that the plans for this coördination had reached a stage where they should soon yield fruitful results. The investigations would cover in London alone some 17,000 fresh cases each year.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

AN Order in Council dated Nov. 23rd provides that surgeon lieutenant-commanders who fail to pass the examination for surgeon commander are nevertheless to be promoted, at Admiralty discretion, if they are otherwise qualified for promotion.

Previously it has been necessary for them to take the examination again, and failure at the second attempt has meant compulsory retirement.

Surg. Rear-Admiral G. L. Buckeridge, C.B., O.B.E., has relinquished the post of medical officer in charge of the R.N. Hospital, Haslar, and will be succeeded by Surg. Rear-Admiral Thomas Creaser, promoted in July last after being senior medical officer at the R.N. Barracks, Chatham. Admiral Buckeridge has completed 34 years' service in the Navy. From 1930 to 1935 he served at the Admiralty as deputy medical director-general.

Surg. Comdr. A. G. Bee has been placed on the retired list at his own request.

ARMY MEDICAL SERVICES

Col. W. B. Purdon, D.S.O., O.B.E., M.C., professor of hygiene, Royal Army Medical College, has been promoted major-general. He is appointed commandant and director of studies at the College, from March 1st, in succession to Major-Gen. W. P. MacArthur, who assumes the appointment of director-general, Army Medical Services, on that date. The new professor of hygiene is Lt.-Col. D. T. Richardson, who is at present assistant director of hygiene at the War Office.

ROYAL SOCIETY OF MEDICINE.—The house and library of this society will be closed from Dec. 24th to 27th, both days inclusive.

A BADGE FOR MEDICAL AUXILIARIES.—The Board of Registration of Medical Auxiliaries (B.M.A. House, Tavistock-square, London, W.C.1) propose to issue a badge to be worn by persons on their register. They offer a prize for the best design.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

December 6th to December 11th

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY.
Pathology. 8.15 for 8.30 P.M.
Communications and Demonstrations.
Orthopædics. 8.30 P.M.
Mr. V. H. Ellis: Lesions of the Supraspinatus. Mr. W. Harvey Gervis: Footwear and the Foot. Miss Maud Forrester-Brown: The Lorenz Bifurcation Osteotomy for Congenital Dislocation of the Hip. Mr. T. T. Stamm: A Method of Grafting Long Bones.
FRIDAY.
Clinical. 5.30 P.M. (Cases at 4.30 P.M.)
Mr. Duncan Fitzwilliams: Aneurysm of the Popliteal Artery, Operated on and the Vessels Injected. Dr. R. W. B. Ellis: Congenital Palatal Paralysis. † Nuclear Agenesis.
Ophthalmology. 5 P.M.
Clinical Meeting at the Western Ophthalmological Hospital, Marylebone-road, N.W.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.
THURSDAY.—8.15 P.M., Dr. Ernest Muir: Epidemiology and Control of Leprosy. Dr. William Hughes: Tuberculoid Leprosy.

BRITISH INSTITUTE OF RADIOLOGY.
WEDNESDAY, THURSDAY, and FRIDAY, Annual Congress at the Central Hall, Westminster.

HARVEIAN SOCIETY.
FRIDAY.—8.30 P.M. (Manson House, 26, Portland-place, W.), Mr. R. T. Payne: Phlebitis (Buckston Browne prize essay).

HUNTERIAN SOCIETY.
MONDAY.—7.15 P.M. (Simpson's Restaurant, Bird-in-Hand court, 76, Cheapside), Dr. E. T. D. Fletcher and Dr. K. McFadyean: The Chronic Cough.

SOUTH-WEST LONDON MEDICAL SOCIETY.
WEDNESDAY.—9 P.M. (Bolingbroke Hospital, Wandsworth Common, S.W.), Dr. J. Purdon Martin: Recovery in the Spinal Cord.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY.—8.45 P.M. (Miller General Hospital, Greenwich), Sir Maurice Cassidy: Doctor and Patient. (Purvis oration.)

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY.—8.30 P.M. (11, Chandos-street, W.), Dr. O. H. Woodcock: The Relation of the Sexes.

BIOCHEMICAL SOCIETY.
FRIDAY.—3 P.M. (Department of Industrial Fermentation, University, Birmingham), Short Papers.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON.
MONDAY.—5 P.M. (London School of Hygiene, Keppel-street, W.C.), Prof. F. W. Twort, F.R.S.: A Comparative Study of Filter-passing Bacteria and Viruses. (First of five lectures.)

CHADWICK LECTURE.
TUESDAY.—5.15 P.M. (London School of Hygiene, Keppel-street, W.C.), Dr. William Butler: The Thames Estuary and the Problem of Sewage Disposal of Greater London.

BRITISH POSTGRADUATE MEDICAL SCHOOL.
TUESDAY.—4.30 P.M., Dr. Hinds Howell: Syphilis of the Nervous System.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. Janet Vaughan: Hæmopoiesis and the Gastro-intestinal Tract (2). 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Dr. S. R. Gloyne: The Pathology of Tuberculosis.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Mr. G. F. Gibberd: Toxæmias of Pregnancy.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. C. Naunton Morgan: Diseases of the Rectum.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

TAVISTOCK CLINIC, Malet-place, W.C.
THURSDAY.—8.30 P.M., Dr. W. Russell Brain: Psychological Manifestations of Neurological Disorders.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY.—4 P.M., Mr. Harold Kisch: Inflammations of the Tonsils.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
BROMPTON HOSPITAL, S.W.—All-day course in thoracic surgery.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E., afternoon course in dermatology.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W., afternoon course in neurology.—Courses are open only to members.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY.—2 P.M., Dr. D. N. Nabarro: Treatment of Congenital Syphilis.
THURSDAY.—2 P.M., Dr. E. A. Cockayne: Causes of Hepatomegaly. 3 P.M., Mr. Eric Lloyd: The Diagnosis of a Limp. Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, S.W.
THURSDAY.—5 P.M., Dr. Anthony Feiling: neurological demonstration.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY.—3.30 P.M., Dr. Macdonald Critchley: Aphasia.
TUESDAY.—3.30 P.M., Dr. E. A. Carmichael: The Autonomic Nervous System.
WEDNESDAY.—3.30 P.M., Dr. F. M. R. Walshe: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Gordon Holmes, F.R.S.: Visual Symptoms of Cerebral Origin.
FRIDAY.—3.30 P.M., Dr. E. A. Carmichael: The Autonomic Nervous System.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY.—4 P.M. (St. James' Hospital, Ouseley-road, S.W.), Mr. V. Z. Cope: Appendicitis.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh-road, S.W.
FRIDAY.—4.30 P.M., Dr. W. J. O'Donovan: Physical Medicine in Diseases of the Skin.

LEEDS GENERAL INFIRMARY.
TUESDAY.—3.30 P.M., Dr. C. W. Vining: Asthma and the Chronic Chest Affections of Children.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY.—4 P.M., Dr. R. E. Tunbridge: Current Views on the Treatment of Diabetes Mellitus.

MANCHESTER ROYAL INFIRMARY.
FRIDAY.—4.15 P.M., Dr. J. Wharton: Ophthalmic Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY.—4.15 P.M. (Victoria Infirmary), Mr. James Russell: Orthopædic and other Surgical Cases.

Vacancies

For further information refer to the advertisement columns

Ashton-under-Lyne District Infirmary.—Surgeon in charge of Fractures. Also H.S., at rate of £150.
Bangor, Caernarvonshire and Anglesey Infirmary.—Sen. H.S., £170.
Battersea General Hosp., S.W.—Res. H.S., and H.P. and Res. Cas. O., at rate of £130 and £120 respectively.
Birmingham City Mental Hosp.—Jun. Asst. M.O., £350.
Birmingham Maternity Hosp.—H.S., at rate of £75.
Board of Control.—Commissioner, £850.
Bradford Children's Hosp.—H.S., £150.
Brighton, New Sussex Hosp. for Women.—Hon. Med. Clin. Asst. to Out-patients. Also H.P. and H.S., each at rate of £100.
Bristol General Hosp.—Cas. H.S., at rate of £100. Also H.P.'s, H.S.'s, and Res. Obstet. O., each at rate of £80.
British Postgraduate Medical School, Hammersmith Hosp., W.—H.S.'s in Surgical Unit, each at rate of £105. Also Obstet. H.S., at rate of £105.
British Red Cross Society, Clinic for Rheumatism, Peto-place, Marylebone, N.W.—Hon. Asst. Laryngologist.
Burnley County Borough.—Asst. M.O., £850.
Cambridge, Addenbrooke's Hosp.—Asst. Radiologist, £500.
Cardiff, Welsh National School of Medicine.—Asst. Lecturer in Dept. of Materia Medica and Pharmacology, £500.
Central London Throat, Nose, and Ear Hosp., Gray's Inn-road, W.C.—Third Res. H.S., at rate of £75.
Cheltenham General and Eye Hosps.—H.P., and two H.S.'s to Spec. Depts., each at rate of £150.
Chester Royal Infirmary.—Surgeon for Orthopædic Dept., £350.
Children's Hosp., Hampstead, 30, College-crescent, N.W.—Res. M.O., at rate of £150.
City of London Maternity Hosp., City-road, E.C.—Asst. Res. M.O., at rate of £80.
Connaught Hosp., Orford-road, E.—Sen. Res. M.O., at rate of £175.
Coventry and Warwickshire Hosp.—Res. Cas. O., at rate of £200.
Derbyshire Royal Infirmary.—H.S., £150.
Dorking, Surrey County Hosp.—Res. Asst. M.O., at rate of £375.
Dreadnought Hosp., Greenwich, S.E.—Receiving Room Officer, at rate of £100.
Durham County and Sunderland Eye Infirmary.—H.S., £350.
Ealing Borough.—Res. Asst. M.O., £350.
East Ham Memorial Hosp., Shrewsbury-road, E.—H.S. to Spec. Depts. and Cas. O., at rate of £120.
Exeter City Mental Hosp.—Asst. M.O., £400.
Folkestone, Royal Victoria Hosp.—Jun. Res. M.O., at rate of £120.
Gordon Hosp. for Rectal Diseases, Vauxhall Bridge-road, S.W.—Res. Surg. O., at rate of £150.
Grimsby Corporation Hosp.—Asst. M.O.H., £500.
Hastings, Royal East Sussex Hosp.—Sen. H.S., at rate of £200.
Hellingley, East Sussex County Mental Hosp.—Jun. Asst. Res. M.O., £350.
Hounslow Hosp.—Cas. O., £100.
Ilford, King George Hosp.—H.S., at rate of £100.
Inverness County Council.—Asst. M.O.H., £600.
Ipswich, East Suffolk and Ipswich Hosp.—H.S., £144.

Kent and Canterbury Hosp.—H.S. to Spec. Depts., at rate of £125.
Kent Education Committee.—Dental Surgeon, £500.
King Edward Memorial Hosp., Ealing, W.—Second Cons. Laryngologist.
King's College Hosp., Denmark Hill, S.E.—Surg. Reg.
Kingston, Surrey County Hosp.—Res. Asst. M.O., at rate of £375.
Lancashire County Council.—Asst. County M.O., £800.
Leeds, Menston Mental Hosp.—Fifth Asst. M.O., £350.
Leicester City Mental Hosp., Humberstone.—Third Asst. Res. M.O., £350.
Lincoln County Hosp.—Jun. H.S., £150–£200.
Liverpool, County Mental Hosp., Rainhill.—Second Asst. M.O., £650.
Liverpool Hahnemann Hosp.—Res. M.O., at rate of £120.
Liverpool, Mill-road Infirmary.—Res. Surg. O., £350.
Liverpool, Waterloo and District General Hosp.—Hon. Surgeon.
London Homœopathic Hosp., Great Ormond-street, W.C.—Hon. Asst. Physician.
Luton Education Committee.—Cons. Aural Surgeon, £2 12*s.* 6*d.* per session.
Manchester, Ancoats Hosp.—Asst. Pathologist, £350. Also Radiological Officer, £300.
Manchester, Prestwich Mental Hosp.—Locum Tenent M.O., 7 guineas per week.
Manchester Royal Children's Hosp., Pendlebury.—Res. H.S., at rate of £100.
Manchester Royal Infirmary.—Res. M.O., £200.
Manchester, St. Mary's Hosps.—H.S.'s, each at rate of £50.
Manchester, Victoria Memorial Jewish Hosp., Cheetham.—Jun. H.S. and Cas. O., at rate of £125.
Middlesex County Council.—Visiting Dental Surgeons, each 2 guineas per session.
Middlesex County Hosp., Bushey.—Res. Asst. M.O., £400.
National Temperance Hosp., Hampstead-road, N.W.—Hon. Ophth. Surgeon. Also H.S., at rate of £100.
Norwich, Jenny Lind Hosp. for Children.—Res. M.O., £120.
Norwich, Norfolk and Norwich Hosp.—Cas. O., £120.
Nottingham General Hosp.—H.S., at rate of £150.
Pontefract General Infirmary.—Second Res. M.O., at rate of £150.
Preston and County of Lancaster Royal Infirmary.—Res. Anæsthetist, £200–£300.
Royal Cancer Hosp., Fulham-road, S.W.—H.S. to Radium Dept.
Royal Naval Dental Service.—Dental Officers.
St. Bartholomew's Hosp., E.C.—Physician to Psychological Dept.
St. John's Hosp., Lewisham, S.E.—H.S., at rate of £100.
St. Leonards-on-Sea, Buchanan Hosp.—Hon. Surgeon.
St. Peter's Hosp. for Stone, Henrietta-street, W.C.—Clin. Assts. to Hon. Staff.
Salford Royal Hosp.—H.S., at rate of £125.
Sheffield, Jessop Hosp. for Women.—Sen. Res. M.O. and H.S.'s, at rate of £150 and £100 respectively.
Shoreham-by-Sea, Southlands Hosp.—Res. Asst. M.O., £300.
Southend-on-Sea General Hosp.—Res. Anæsthetist, at rate of £125.
Taunton and Somerset Hosp.—H.S., at rate of £100.
Trans-Jordan, Women's Hosp., 'Amman.—Res. M.O., £200.
Wallasey, Victoria Central Hosp.—Res. H.S., £150.
Watford and District Peace Memorial Hosp.—H.S., at rate of £150.
West London Hosp., Hammersmith-road, W.—Med. Reg., £250. H.P. and two H.S.'s, each at rate of £100. Also Physician for Medical Diseases of Children.
Whipps Cross Hosp., Leytonstone, E.—Res. M.O., £350.
Willesden General Hosp., Harlesden-road, N.W.—Cas. O., at rate of £100. Med. Reg., at rate of £50. Also Hon. Clin. Assts. to Out-patient Dept.
Wolverhampton and Midland Counties Eye Infirmary.—H.S., £150.
Wolverhampton Royal Hosp.— H.S. and H.S. for Orthopædic and Fracture Dept., each at rate of £100.
Woolwich and District War Memorial Hosp., Shooters Hill, S.E.—Hon. Laryngologist. Also Res. Surg. O., £175.
Worcester Royal Infirmary.—H.P., and H.S. to Gynæcological Dept., at rate of £160 and £140 respectively.

Births, Marriages, and Deaths

BIRTHS

BUCK.—On Nov. 27th, at Leicester, the wife of Dr. K. C. Buck—a son.
DAVIES.—On Nov. 22nd, at Southsea, the wife of Dr. J. Rodyn Davies—a son.
ELLMAN.—On Nov. 25th, at Weymouth-street, W., the wife of Dr. Philip Ellman—a son.
GARDNER.—On Nov. 28th, at Nuffield House, London, the wife of Dr. W. J. Gardner, of Irchester, Northants—a daughter.
LOWE.—On Nov. 25th, at Tiverton, Devon, the wife of Mr. George Lowe, F.R.C.S. Edin.—a son.
OSBORNE.—On Nov. 23rd, at Saltash, the wife of Surg.-Comdr. (D) L. B. Osborne, R.N.—a son.
PERROTT.—On Nov. 22nd, at Stanmore, the wife of Dr. G. F. Donaldson Perrott—a son.
TERRY.—On Nov. 28th, at Worcester, the wife of Dr. J. O. Terry—a daughter.
TWIGG.—On Nov. 27th, at Salisbury, the wife of Major T. H. Twigg, R.A.M.C.—a daughter.

MARRIAGES

GRANT—STEPHANY.—On Nov. 22nd, at the New West End Synagogue, Basil S. Grant, M.B., B.S. Lond., to Evelyn, only daughter of Mr. Lionel Stephany, of Queen's-gate, S.W.

DEATHS

BARTLETT.—On Nov. 26th, Charles Eastty Bartlett, of Tintern, late R.A.M.C., M.R.C.S. Eng.
DIXON.—On Nov. 26th, 1937, Joseph Francis Dixon, M.A., M.D. (T.C.D.), of Littlethorpe House, Narborough, late Medical Superintendent of the City Mental Hospital, Humberstone, Leicester.
DOWNER.—On Nov. 28th, in Birmingham, Reginald L. E. Downer, M.D. Lond., M.C.O.G., of Shrewsbury, in his 54th year.
GRIFFITH.—On Nov. 24th, at Woking, A. Hill Griffith, M.D. Aberd., F.R.C.S. Edin., aged 78.
KEOGH.—On Nov. 23rd, at Chertsey, Frederick Edwin Hubert Keogh, M.R.C.S. Eng., Colonel (T.D.).
MCCARTHY.—On Nov. 27th, at St. Bartholomew's Hospital, Marsham à Beckett McCarthy, F.R.C.S. Edin.
PEACOCK.—On Nov. 26th, at Church Stretton, James Peacock, Durh., aged 75.
RAMBAUT.—On Nov. 30th, at St. Andrews, Northampton, Daniel Frederick Rambaut, M.D. Dubl., in his 73rd year.
TRIPP.—On Nov. 28th, at Fishbourne, Chichester, Basil Hubert Howard Tripp, M.R.C.S. Eng., aged 62.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET 100 YEARS AGO

December 2nd, 1837, p. 345.

From a leading article.

In the number of this Journal for last week, we drew a brief, but, we believe, an accurate parallel between the existing institutions of France and those of this country, for the reception of persons of the poorer classes when afflicted with disease, or labouring under the effects of injuries. We referred to a large number of charitable establishments, on this side of the channel, instituted for purposes of public good, but so mismanaged by a small number of private and incompetent individuals, as, in a great measure, to defeat the humane and beneficent motives which originally gave them birth. We exposed, in a few words, the selfish, corrupt, and interested principles under which the medical appointments to our hospitals and infirmaries are almost invariably made. We called to mind the fact of the offices of dresser and house-surgeon being unblushingly *sold* in nearly all the metropolitan hospitals; we could, indeed, have cited a well-known case, in which the still more important and responsible office of "surgeon" to an hospital was disposed of for the sum of £500; and we demonstrated the very significant fact, that the 14 public hospitals of Paris were supported by nearly the same amount of income as is required to meet the expenses of only two similar, though much inferior, institutions in London. The parallel alluded to has not been made with any invidious desire of lessening the value of our own hospitals and medical charities, nor through any unnational admiration for foreign establishments. We love what is English, and it is a sincere wish to see the medical, as well as all other institutions, of the British empire, freed from the abuses by which they are at present disgraced, that induces us to call attention to their mode of government as compared with that of analogous continental charities. . . . Nothing, in fact, produces a more baneful effect on any public institution than a vicious mode of administrating its affairs, while nothing is more calculated to extend and perpetuate the benefits of public establishments than an uniform, well directed, and (if we may use the phrase) virtuous method of government. It has already been demonstrated, "usque ad nauseam", that appointments to the hospitals, and other charitable medical institutions, of Great Britain, are either directly sold for money, or distributed among a few individuals, who, either through local circumstances, intrigue, family connection, or some other equally unworthy influence, have obtained a certain degree of "interest" with the governing bodies. . . . It is notorious that no man, unconnected with a certain *clique*, has the slightest chance of becoming physician or surgeon to any of our metropolitan hospitals, no matter how distinguished he may be for talent, learning, or professional skill. Were DUPUYTREN himself alive, and did circumstances admit of his becoming a candidate for the office of surgeon to *Guy's Hospital*, we have no doubt that King HARRISON would dismiss him, as an "unrecognisable" and impudent intruder. The same fate would certainly await him at *St. Thomas's*, at *St. Bartholomew's*, at *St. George's*, and at the *Middlesex Hospitals*. . . .

NOTES, COMMENTS, AND ABSTRACTS

BEAM THERAPY AT BIRMINGHAM

ON Nov. 26th Sir Cuthbert Wallace, P.R.C.S., opened a department of radium beam therapy research at the General Hospital, Birmingham. This is the latest development in a programme of extension and modernisation of the department of radiation therapy, begun in 1934.

The unit at present contains two grammes of radium, of which one gramme has been presented to the hospital by Lord Austin, while the second has been lent by the National Radium Commission, which has also promised to lend a further gramme in six months' time. The apparatus has been designed in collaboration with the Radium Beam Therapy Research in London, and incorporates the result of their experiences together with some improvements, particularly in methods of distance control, which are said to make it one of the best in the country. Special attention has been given to the safety of the patients and the staff, and allowance has been made, in this respect, for a possible increase to 20 grammes in two units at a later date. This aspect of the design was made easier by the fact that a bungalow type of ward, separate from the main hospital, was made available for the installation of the unit.

The radium itself, when not in use, is housed in a lead safe, with walls 10 in. thick, and is conveyed to the container, after it has been suitably adjusted to the patient, by air pressure; it is returned to the safe, automatically by vacuum, on the completion of the treatment period. The "beam" is produced by means of an opening in the lead container, to which is fitted an applicator made from special tungsten alloy, developed as a result of research by the General Electrical Company in their laboratories at Wembley. This alloy, while possessing a very high protective value, has substantial advantages in price over platinum and gold (it costs roughly twenty shillings a pound), and is found much superior to lead in toughness and density; this makes it valuable where protection without bulk is required, as for example in designing an applicator to approach any concave surface such as the root of the neck or the posterior part of the submental region. It is thought that this alloy, by providing for more strict localisation of the beam, with less bulk than has hitherto been possible, and without very great expense, may represent a distinct advance in the design of beam-therapy apparatus.

Three movements of the beam are possible, as in the Stockholm and Radium Beam Therapy Research units. The amount of radium available will make it possible to work with a radium-surface distance of 8·5 cm. It is of course important that this distance should be as great as is compatible with a treatment-time which the patient can tolerate, so as to improve the relationship between the surface and deep intensities—i.e., to improve the tumour dose, as compared with the dose to overlying skin.

IMPROVING THE MINER'S LOT

THE latest report of the Miners' Welfare Committee [1] assuredly cannot be regarded as a "blue book" in the sense in which that term is still too often understood. Attractively presented and illustrated, it tells an interesting story of past development and present activities. The fund was constituted by the Mining Industry Act, 1920, which imposed a levy of 1*d.* a ton on all coal produced, reduced to ½*d.* as from 1932; further addition was made in 1926 by the imposition of a levy of 1*s.* in the £ on mining royalties. The present report shows the total receipts from 1921 as £15,976,342 and the income for 1936 as £729,225. These are arresting figures as derived from and applied to a single industry, but they fall into proportion when it is realised that more than three-quarters of a million men are employed in coal-mining.

Many of the varied schemes that have been developed bear directly and indirectly on the health of the mining community. The heaviest item of expenditure in 1936 was for pithead baths, constituting 58·1 per cent. of the total, while the total expenditure since 1921 has been £4,250,282. In the earlier days pithead baths were not viewed with favour, but with experience the attitude has rapidly changed and by the end of 1936 the Central Committee had provided 225 installations catering for 328,904 workers. This means a radical amelioration of the miner's lot—how radical can be realised when one envisages the miner travelling home, often for a considerable distance, with the grime of the pit and in wet pit clothes, and also the domestic labour and turmoil involved in preparing a tub bath in front of the kitchen fire. Now there is not only the well-equipped bath, but the pit clothes are left behind and dried, and a man can travel in normal attire and comfort. The cost to the participant in most installations is not more than 6*d.* a week, a small sum in relation to the saving of domestic costs and the increase of comfort.

A more direct health measure is the provision of convalescent homes or of facilities for admission to such. Since 1921 the sum expended on convalescent homes has been £2,033,531, and on grants for ticket funds £659,464. Other grants have been for hospitals, ambulance services, for special medical treatment and appliances, and for nursing services; of indirect benefit to health are the grants for recreation grounds, tennis and bowls, children's playgrounds, and camps for boys. The report graphically illustrates these various activities, and shows that forethought and imagination have been applied to the planning.

Such developments as these, and the new villages built around the later-opened mines, indicate how far we have travelled from the old indifference to the human needs of industry, since the social conscience was quickened in this respect in the middle of last century. Disraeli draws in "Sybil" a vivid picture of the conditions of the mining community at that time (1845):

> "The plain is covered with the swarming multitude: bands of stalwart men, broad chested and muscular, wet with toil and black as the children of the tropics. . . . Naked to the waist, an iron chain fastened to a belt of leather runs between their legs clad in canvas trousers, while on hands and knees an English girl for twelve, sometimes for sixteen hours a day, hauls and hurries tubs of coal up subterranean roads, dark, precipitous, and plashy. . . . See, too, these emerge from the bowels of the earth! Infants of four and five years of age, many of them girls, pretty and still soft and timid."

It is a different picture that the present report conveys. If there is still no room for complacency, there is certainly room for congratulation.

SUPPLEMENTS TO THE DIET OF CHILDREN

EXTENDING previous work,[1] Mr. Eric Wood and Mr. T. Wake Simpson have made further observations on the effects of giving elementary school-children various forms of nourishment in addition to what they get at home. Six schools have coöperated in their new experiments,[2] five in a depressed area and one in a London borough, with a total of 864 children. With an elaborate experimental scheme the effects were tested of daily supplements to the home diet of (*a*) a third of a pint of milk, (*b*) two large teaspoonfuls of Virol, and (*c*) two large teaspoonfuls of malt

[1] Miner's Welfare Fund. Fifteenth Annual Report of the Miners' Welfare Committee for the year 1936. H.M. Stationery Office. 1937. Pp. 114. 1*s.* 6*d.*

[1] *Med. Offr*, 1935, **53**, 125 and 135; see *Lancet*, 1935, **1**, 1054 and 1241.

[2] *Med. Pr. and Circular*, Oct. 27th, 1937, p. 370.

extract and cod-liver oil B.P.—the calorie equivalent being the same for each supplement. The effects were measured in changes in height and weight.

Taking the observations as a whole it is found that the children with milk or with malt and cod-liver oil increased their weight by about a third of an ounce per week per child more than the children on the unsupplemented home diet, and their height by one-tenth of an inch per year per child; whereas the corresponding figures for Virol were three-quarters of an ounce and two-tenths of an inch. There is a certain amount of variability in these results when comparisons are made by term, by area, and by sex, but in general they support the authors' conclusion that all three supplements increased the rate of growth but that Virol gave a better result than the other two. The result with Virol was especially better in the summer term—a finding which Wood and Simpson attribute to its greater palatability under summer conditions.

The paper does not discuss the relative cost of the three supplements. From the administrative point of view it would of course be useful to know whether a rather larger amount of milk—the supplement was a third of a pint per day—would give as good a result as Virol at a lower cost.

UNDULANT FEVER

Dr. H. J. Harris maintains (*N.Y. St. J. Med.* 1937, **37**, 1295) that brucellosis is to be suspected in any obscure or chronic illness; for as in his experience it has simulated (or caused) anæmia, arthritis, ulcerative colitis, cholecystitis, appendicitis, toxæmia of pregnancy, syphilis, typhoid fever, nephritis, pyelitis, cystitis, neuritis, tuberculosis, osteomyelitis, peptic ulcer, psychoneurosis, bronchial asthma, fibrinous bronchitis, abortion, salpingitis, infective mononucleosis, perforation of abdominal viscus, unresolved pneumonia, low back pain, spondylitis, prolonged hyperidrosis, pain in the chest suggesting disease of the heart or lungs, epistaxis, hyperglycæmia and glycosuria resembling diabetes, and various skin conditions and "run down states." He attributes the failure to recognise brucellosis to ignoring blood-agglutination titres or to neglect to perform either the intradermal or cytophagic tests. Good results, he holds, may be obtained from vaccine therapy, for he is able to report that among 132 cases in which *Brucella abortus* vaccine was used there were no deaths, 42 per cent. were definitely cured, 36 per cent. much improved, and 18 per cent. showed some improvement; only 3 per cent. showed no definite improvement. Of 39 untreated cases, on the other hand, 32 continued to have recurring symptoms of brucellosis.

HERBALS

A RECENT notice in this column of Mrs. Leyel's monograph on tisanes and electuaries entitled "Herbal Delights" was headed "A Modern Herball" by way of calling attention to its being a modern equivalent of the famous Gerard's Herball. It so happens this is actually the title (without the double l) of an elaborate compilation by Mrs. M. Grieve, F.R.H.S., covering the medicinal, culinary, cosmetic, and economic properties of all groups of the vegetable kingdom, along with much about their folklore and cultivation. This book can be obtained from the author at Whin's Cottage, Chalfont St. Peter, Bucks (2 vols. with 96 plates post free £2 3s.).

INHALATION THERAPY

THE ASMALATOR has been demonstrated to us by Relegen Ltd. (60, High Holborn, London, W.C.1), makers and distributors of respiratory appliances and medicaments. It is a machine, weighing 9 lb. and worked by an electric motor, which delivers a very fine "dry" vapour into a light mask fitting over nose and mouth. Its use is recommended for all inflammatory states of the respiratory tract (e.g., bronchitis, colds, hay-fever), but especially for the relief of asthma. The advantage claimed for the dry vapour is that it penetrates to the bronchioles and alveoli. The manufacturers supply an Asmalos Asthma Solution—stated to contain adrenaline, pituitary extract, chlorbutol, papaverine, Eumydrin (atropine methyl nitrate), and procaine in a glycerin-water base—and an Asmalos Catarrh Solution. They also make various forms of inhaler worked by hand and not by electricity. The Asmalator, which costs 18 guineas, is supplied for alternating or direct current, and the voltage is universal.

PRODUCE FROM BOURNVILLE.—Nobody has ever been able to find a really good excuse for smoking, and probably nobody ever will. But chocolate is one of the pleasant things that are generally allowed to be "good for us," and the cacao bean has come to play as important a part in modern life as the tobacco leaf. It has become difficult to imagine a world without their products; certainly it would be a world where Christmas presents would be a worse problem than they are to-day. We have received from Messrs. Cadbury Brothers a selection of their wares, including boxes of their "Vogue" chocolates which should make particularly welcome gifts, while tins of cocoa, drinking chocolate, and Bourn-vita will find a temporary place in the store-cupboard.

HEPARINISING THE DONOR IN BLOOD TRANSFUSIONS: CORRIGENDUM.—In Dr. Hedenius's paper as printed in our issue of Nov. 20th one figure was omitted and one given wrongly. The fifth sentence under the heading "use of heparin" should read: "Transfusions were effected in 20 per cent. of the cases because of post-operative complications (hæmorrhage sometimes combined with septic conditions) especially after cancer operations, in 5 per cent. because of bleeding stomach ulcers, in 7 per cent. because of chronic septic conditions, and in 15 per cent. because of serious anæmia of pernicious or chronic secondary type."

Appointments

AVERY, JULIA C. H., M.D. Lond., D.P.H., Part-time Assistant Medical Officer for Reigate.

BILLINGTON, C. M., M.D. Camb., Resident Medical Officer at Haileybury College.

DEANE, M. M., M.B. Melb., M.R.C.P. Lond., D.P.M., D.A., Physician (Grade II) at the West Middlesex County Hospital.

HOWIE, J. E., M.D. Liverp., D.P.M., Deputy Medical Superintendent at the County Mental Hospital, Winwick, near Warrington.

KINGSTON, F. E., M.B. Lond., D.P.M., Senior Assistant Medical Officer at Menston Mental Hospital, Yorkshire.

PARSONS, F. B., M.D. Camb., M.R.C.P. Lond., Hon. Physician at Addenbrooke's Hospital, Cambridge.

*PRITCHARD, W. A., M.B. Lond., Resident Assistant Medical Officer at the Grove-road Institution, Surrey County Council.

ROSE, D. J., M.R.C.S. Eng., Medical Superintendent at Brockhall Institution for Mental Defectives, Langho, near Blackburn.

SELLORS, T. HOLMES, D.M., M.Ch. Oxon., F.R.C.S. Eng., Additional Surgeon to the London Chest Hospital.

WADSWORTH, G. R., M.B. Belf., D.P.M., Deputy Medical Superintendent at the County Mental Hospital, Lancaster.

WILES, PHILIP, M.S. Lond., F.R.C.S. Eng., Consulting Orthopædic Surgeon to King Edward Memorial Hospital, Ealing.

West London Hospital.—The following appointments are announced:—

IRONSIDE, REDVERS, M.B. Aberd., F.R.C.P. Lond., Neurologist;

KONSTAM, G. L. S., M.D., M.R.C.P. Lond., Physician;

LAURENT, L. P. E., M.D., M.R.C.P. Lond., Assistant Physician; and

COPEMAN, W. S. C., M.D. Camb., F.R.C.P. Lond., Physician in charge of the Department for Rheumatic Diseases.

Certifying Surgeons under the Factory and Workshop Acts: Dr. G. G. AIREY (Ledbury District, Hereford); Dr. J. CAMERON (Keswick District, Cumberland); Dr. D. C. DRUITT (Petworth District, Sussex); Dr. G. A. FISHER (Skipton District, York, W.R.); and Dr. A. R. O. DENTON (Modbury District, Devon).

* Subject to confirmation.